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Paper TRADE JOURNAL

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VOLUME 127, No. 3 JULY 15, 194

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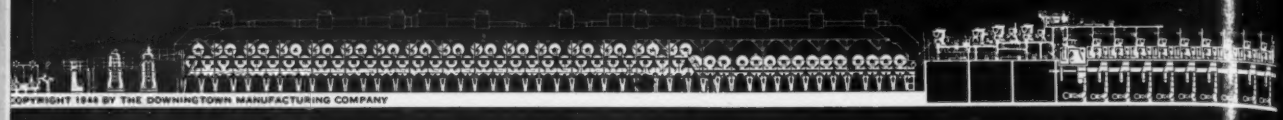

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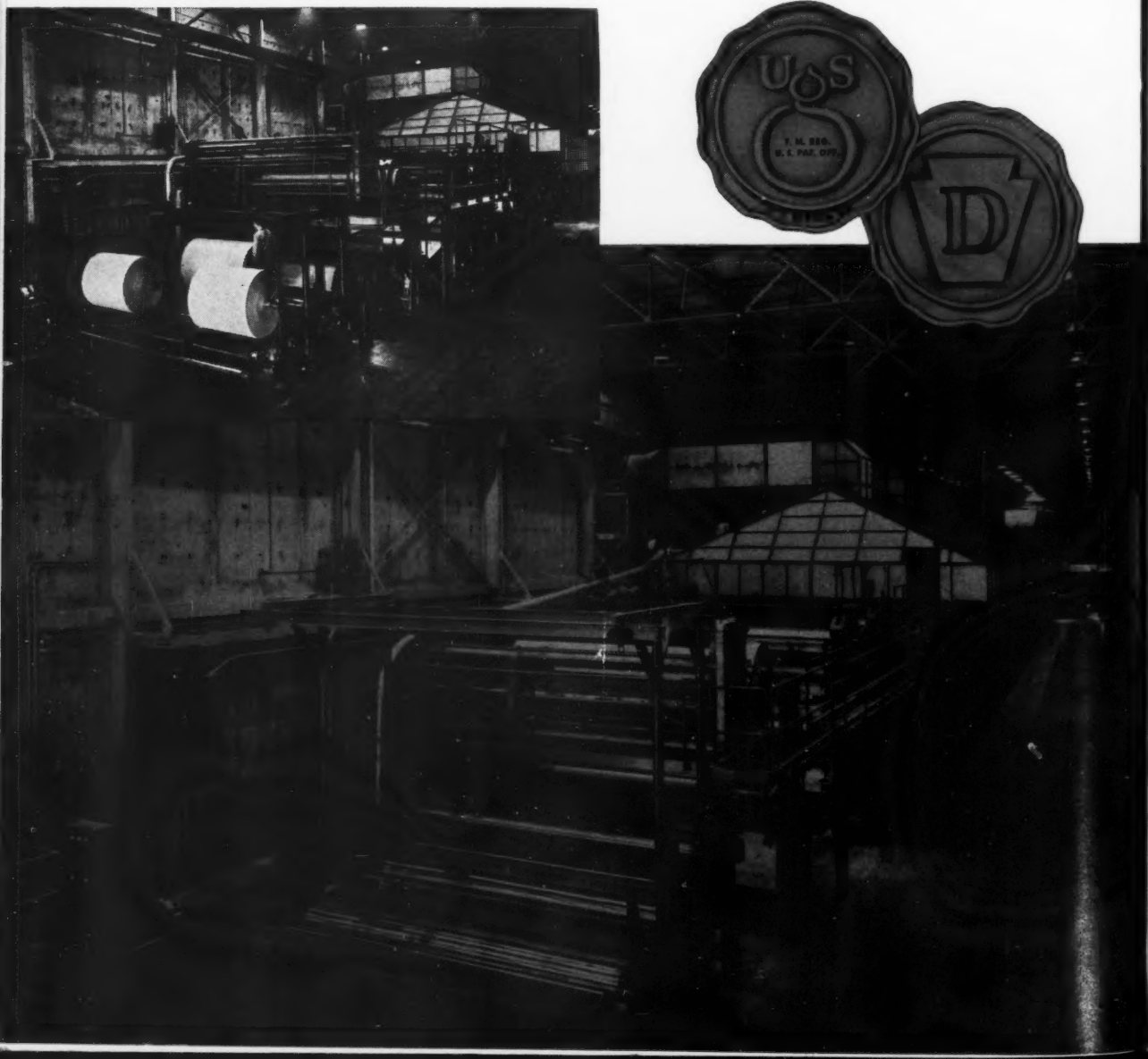

IN THIS ISSUE

JULY 15, 1948

Kalamazoo TAPPI Fun Day	7
Natural Gas For Southern Mills	7
Canadian Mills Have Pulpwood Surplus	8
Business Not Bad Because Big	9
Baker Lauds National Waste Paper Committee	10
Everett Pulp & Paper Co. Adopts Retirement and Insurance Plan	14
LETTERS	16
Two Likely Amendments To Taft-Hartley Law	18
The Importance of Economic Considerations in Wood-Waste Utilization Research	22
Championing Scientific Timber Conservation	28
TRENDS	30
IMPORTS	32
PRICES	34
MARKETS	36
FINANCIAL RECORD	38
Infilco Cyclator Treats Paper Mill White Water	44
OBITUARY	46
PRODUCTION RATIO REPORT	46
INDUSTRIAL DEVELOPMENT	49
Gate and Globe Valve Maintenance and Repair	49
Engineering the Air Compressor Installation for Maximum Efficiency	51
LITERATURE	56
EQUIPMENT AND SUPPLIES	57
TAPPI SECTION	59
Coating Paper on the Paper Machine by the Rotogravure-Offset Method	59
Experiences with Pulpwood Handling and Accounting	62
CLASSIFIED ADVERTISING	68

INDEX TO ADVERTISEMENTS ON PAGE 86

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CALENDAR OF COMING EVENTS

ASSOCIATION EXECUTIVES: Please send us your meeting dates and locations for this column as far in advance as possible. No charge for publication.

JULY 20: Sport and Field Day, Michigan Superintendents. Gull Lake Country Club, Kalamazoo, Mich.

AUGUST 16-17: TAPPI Plastics Conference. Institute of Paper Chemistry, Appleton, Wis.

AUGUST 18-20: TAPPI Fundamental Research on "Physical Constituents of Wood." Madison, Wis.

AUGUST 31: Annual Golf Tournament, Chicago Paper Trade Ass'n., Medina Country Club, Chicago, Ill.

SEPTEMBER 8-10: Technical Section, Canadian Association. Harrison Hot Springs, B. C.

Salesmen's Ass'n., of the Paper Industry—Eastern Division —Midston House, New York City. Mondays, 12 noon to 2:00 PM. Resuming in September.

Salesmen's Ass'n., of the Paper Industry—Western Division —Sherman Hotel, Chicago. Mondays, 12 noon to 2 PM. Resuming in September.

Allied Industries Luncheon Club—Second Monday of each month, Commodore Hotel, New York City. 12 noon.

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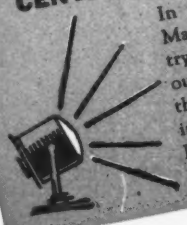
CENTENNIAL SPOTLIGHT 1848-1948



In this 100th anniversary year as Machine Builders for the Paper Industry, Puseyjones points with pride to outstanding post-war installations. In the spotlight . . . 132" Fourdrinier Machine with 12 ft. diameter M. G. Yankee Dryer for San Rafael Paper Co., Mexico.

PAPER BAGS FOR "HYBRID" CORN

(NEWS ITEM: *A new method of corn culture uses paper bags to control the breeding of each corn plant.*)

There's a revolution in the corn belt . . . controlled breeding which results in "hybrid" corn is replacing the old method of corn culture. And one of the first steps depends on a paper bag! As soon as tassels begin to appear, a waterproof kraft paper bag sealed with waterproof glue is tied about the tassel of each plant to collect the pollen which will fertilize a strain of corn that will be identical from season to season. The height and yield of each cornstalk can thus be controlled, resulting in additional cash income and less labor for today's farmer.

Paper bags to package ice . . . paper cans for frozen foods . . . paper tape for recording sound . . . new uses for paper calling for new standards of lightness and toughness, new standards of quality in performance. New responsibilities — new opportunities for the Pulp and Paper Industry.

The Puseyjones Organization is now devoting itself completely to the design and construction of Paper-Making Machinery built to new high standards of speed and efficiency, and to the modernization of existing machines. Additional capacity in Metals Fabrication is now available through conversion of facilities formerly devoted to the building of ships.

Puseyjones Engineers will welcome the opportunity to work with you in solving production problems.

THE PUSEY AND JONES CORPORATION
Established 1848. Builders of Paper-Making Machinery
Wilmington 99, Delaware, U. S. A.

THE SIGN OF TRADE MARK SUPERIOR QUALITY

Paper TRADE JOURNAL

VOL. 127, NO. 3 REG. U.S. PAT. OFF. JULY 15, 1948

THE NEW OFFICERS. Left to right—Victor Burstein, Michigan Paper Co., treasurer; J. J. Harrison, Michigan Carton Co., secretary; Stephen Kubolich, Lee Paper Co., vice-chairman; Paul Bartholomew, Hawthorne Paper Co., chairman.

PROGRAM COMMITTEE. Left to right—Donald Militzer of the Garret-Burgess Co.; Wm. Lunsford, Hercules Powder Co.; Richard Marten, A. E. Woolams Co.; Frank Eilers of the Orr Felt & Blanket Co.

THE OASIS was not the least of the attractions provided for the entertainment of those who attended the gathering. It was stocked with good things in abundance and variety.

LEFT TO RIGHT: Jack Hartung of the St. Regis Co.; Al Webster, Kalamazoo Vegetable Parchment Co.; J. Brunner, Wyandotte Chemical Co.; Dave Howard of The Howard-Smith Paper Co.

Kalamazoo TAPPI Fun Day

KALAMAZOO, Mich. — The annual Kalamazoo Valley Section of the Technical Association of the Pulp and Paper Industry Fun Day was held at Gull Lake Country Club on June 22. Of the approximately 135 present for the day, 105 were golfers and 30 non-golfers. Golf winners were Dave Howard with low gross of 75 and Joe Horaceck with 77. Other golf winners were Al Webster with most 5's; Ralph Atkins most 6's; and Clifford Beebe, high gross. Bogue money winners were M. H. Randall, Art Cole, J. Harrison and Les La Liberte.

At a short business meeting held after dinner the following officers were elected for the coming year: Chairman, Paul Bartholomew of the Hawthorne Paper Co., Kalamazoo; vice-chairman, Stephen Kukolich of the Lee Paper Co., Vicksburg, Mich.; secretary, J. J. Harrison of the Michigan Carton Co., Battle Creek; and treasurer, Victor Burstein, Michigan Paper Co., Plainwell.

Final entertainment feature of the day was a screening of official Navy war pictures. This part of the program was handled by Robert Campbell and Leslie C. Eaton of the Naval Force.

This year's Fun Day arrangements were handled by Donald Militzer of the Garrett-Burgess Co., as chairman, assisted by Frank Eilers of the Orr Felt & Blanket Co., Wm. Lunsford of the Hercules Powder Co., and Richard Martin of the A. E. Woolams Co.

(Additional pictures on next page)

Natural Gas for Southern Mills

SAVANNAH, Ga.—Extension of a pipeline from the natural gas fields of Mississippi to Alabama, Florida, Georgia and Southeastern South Carolina, to benefit 22 key cities and the industries existing or projected in them is being widely discussed.

Applications by gas corporations for a certificate of public convenience and necessity authorizing the operation of the pipeline system are pending before the Federal Power Commission.

(Continued on page 42)

Canadian Mills Have Pulpwood Surplus

TORONTO, Ont.—Contrasting with conditions prevailing during recent years, paper mills have on hand this year more pulpwood than they will be able to use, even with the present high rate of production of newsprint and kraft papers.

It is pointed out, however, that the current pulpwood surplus, due to last season's record cut, does not really affect Canadian paper mills extensively. While most mills buy some market pulp, most of their supplies come from their own limits.

While there has been a drop in wood prices in Eastern Canada as a result of the ten million cords cut last autumn and winter, no one expects lower prices for wood pulp or paper unless there is a prolonged period of surplus supply. It is definitely a buyers' market, however, as far as wood is concerned. Those chiefly and most vitally affected at this time are pulpwood exporters and open-market dealers. The pulpwood buyer is now in a position to say what he will pay, whereas last year the vendor set the price at which he was willing to sell. The present situation is reflected in the increased exports of pulpwood to the United States. It will be remembered that the American Paper & Pulp Ass'n. reported U. S. imports of pulpwood for the first quarter of this year as 558,936 cords, against 397,618 last year. Current prices are said to range from $15 to $20 a cord for peeled wood, with the higher prices prevailing in areas close to the U. S. border. This is said to represent a decline of from two to five dollars a cord.

How long the present surplus position will continue depends on a number of factors. The all-important one is how much wood will be cut during the season just ahead. Camps are being organized presently for the fall and winter operations. The next important factor is the conditions prevailing over the months when the wood is being transported to the markets. Seasonal precipitation and water levels are important and so are availability of workers and the wages demanded as well as other cost factors. Pulpwood contractors must feel assured of sufficient returns before risking their capital and time in woods operations. The cut may also be influenced by what the prospects appear to be for continued high production by the newsprint and paper mills. At the moment everything points to continued capacity operations for all mills for as far ahead as can be seen. It is therefore likely that the pulpwood cut during the coming season will be well up to the record of the last season, but this will not be definitely known until around the end of October or later.

If this year's record pulpwood cut is followed by a comparable supply in 1948-49, some pulp and paper men think the present temporary surplus might turn out to be more or less permanent, which would mean cheaper wood for the mills. Right now, however, it may well be that some company officials are uneasy when they think of the dollar value of present inventories of pulpwood. However, few admit they believe they have too much on the basis of present operations. The problem is not the same as it was in 1938, they say.

Van Hagan Succeeds Wilson

MADISON, Wis.—Charles E. Van Hagan, of this city, has been named secretary-treasurer of the Forest Products Research Society succeeding Thomas R. C. Wilson, who plans to complete his work with the Society in August and resume his practice as a consulting timber engineer.

Mr. Van Hagan comes to the Forest Products Research Society from the U. S. Forest Products Laboratory, where for the past four years he has been a technical writer and reviewer.

Pulp and Paper Reports Axed by Congress

WASHINGTON—Drastic cuts were ordered in census reports covering manufacturing, production, retail and wholesale trade, foreign trade and other economic activities, for the fiscal year that began July, in view of reduced appropriations in the past Congress.

Many reports on current operations under these headings will be discontinued, while others will be issued less frequently or based on less complete coverage, the Department of Commerce said.

Among those to be issued less frequently, and in reduced coverage, will be pulp and paper industry reports, it was stated.

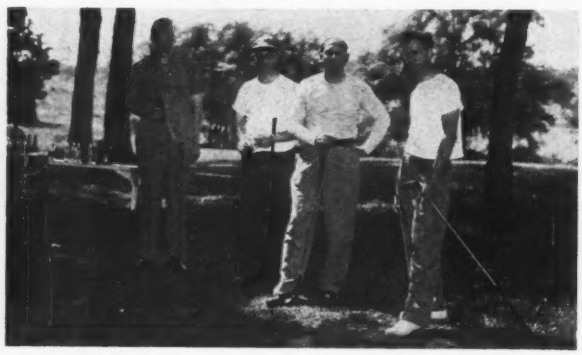
New Westminster Paper Co. Mill Starts Operations

NEW WESTMINSTER, B. C. — Production of groundwood pulp paper has started at the new $275,000 plant of the Westminster Paper Co., Ltd., here, first pulp mill in the Fraser Valley territory. It is designed to supply the paper mill in New Westminster with the surplus shipped to the allied mill in Bellingham. A bleaching machine will be installed shortly.

Weather Slows Hinde & Dauch Plant Construction

CHATHAM, Ont.—The new Hinde & Dauch Paper Co. plant here is beginning to take shape, although a little behind schedule on account of weather conditions, and the program of equipment bettermen at established plants is progressing satisfactorily, according to L. F. Winchell, vice-president and gen-

KALAMAZOO TAPPI FUN DAY—Continued from preceding page.



LEFT TO RIGHT: Claude Fletcher and R. Erickson of Graphic Arts Research; E. B. Taylor of the Stein-Hall Co.; K. Latimer of Graphic Arts Research.

LEFT TO RIGHT: H. Vandenberg of the Stein-Hall Co.; W. Macklem of Black Clawson; G. Sutton of Sutherland; Roy Holden and Rudy Kutter of Black Clawson.

eral manager in a letter to shareholders.

Although demand for products made by the company softened during the first half-year period, the company has been able, so far, to maintain production at last year's levels and "Unless added disruptive factors occur, which we do not now foresee, we should be able to finish out the year with perhops a little higher tonnage record than in 1947," the letter states.

Costs have increased considerably during the period on just about everything important to operations—pulp, paper stock, freight, coal and labor—and, to date, the company has taken no relief through increases in selling prices of major production of boxes and container materials, it is stated.

Stockholders and Employes Ratify Pension Plan

SPRINGFIELD, Mass.—Stockholders of the Package Machinery Co. in East Longmeadow have voted unanimously to ratify and improve the company's pension plan.

The Package Machinery pension plan is said to be the first in this area installed through the medium of union negotiations and with full approval of Local 220 of the employes as to its contents.

The accepted plan enables an employe to retire at the age of 65 with an income, including his social security, of one percent of his earnings for each year of employment with the company.

In discussing the matter, Roger L. Putnam, chairman of the board of directors, advised the group: "The productive capacity of the increased manufacturing facilities of the new Package Machinery plant in East Longmeadow has resulted in a change of work schedules to a 40-hour week. A year ago, the company had an $8,000,000 backlog of business, which has been brought down to $5,500,000. Further cutting into this backlog, at current rates of production, would eventually cause a greater revision of manufacturing schedules. The present change makes for more efficient operations to continue at the present high employment level.

"I want you to know that the officers of the company, as well as our excellent sales force, are working hard to produce new business. Vice-President George A. Mohlman is now in Europe, and one of the objects of his trip is to find new things that we can manufacture. We are also actively soliciting business from the armed services, similar to what we did during the war."

Dennison Showing Table Napkin Of Laminated Cleansing Tissue

NEW YORK—The Fifth Avenue store of the Dennison Mfg. Co. is displaying a new type of paper table napkin made of laminated cleansing tissue. It has a weight comparable to cloth napkins, and is free of the "blow-away" deficiency of conventional paper napkins.

Business Not Bad Because Big

Natn'l. Credit Men's Ass'n. Executive Points Out

The theory that because a business is big or because it does a large share of business in its field, it is illegal is one of the most vicious that American economy has ever faced says Henry H. Heimann of New York City, executive manager of the National Assn. of Credit Men, in his Monthly Business Review released July 15.

Mr. Heimann points out that this untenable conclusion has involved strong, ethical companies in needless expenditures of millions of dollars in time, fees, and salaries paid in the preparation of adequate defense, and that this attitude on the part of some of our government departments has suppressed much of the pioneering spirit of our industrial leaders and has checked needed expansion in limited fields.

"Our government should realize that since so much is dependent on a sound business recovery, every effort should be made to aid rather than harass legitimate business," Mr. Heimann says. "Some of the governmental trends of recent years with respect to business and some tendencies of the courts are not conducive to the maintenance of further development of the greatest industrial organization the world has ever known. This theory is not only contrary to economic laws, but it defies all the traditions of American economic history. Our large organizations of today grew from small beginnings, because they rendered a needed service at a fair value. Unless the man who launched the business had the ambition and the very worthwhile desire to grow and expand, we never would have had the American industrial organization which contributed so much to our war efforts and in peacetime to our enviable standard of living and which are now largely saddled with the responsibility of saving the world."

Recent court decisions on problems of monopoly and anti-trust violations have pointed in the direction of a theory that if business is big, this in itself constitutes prima facie evidence that its operations are illegal, Mr. Heimann says. He remarked that this is one of the most dangerous philosophies this nation has ever known.

"Time and again it has been demonstrated that size of organization is no criterion whatsoever of the ethics of its operations," Mr. Heimann says. "Bigness in itself is not bad. As a matter of fact, the record clearly proves that if a business grows, its policies must be sound to enable its expansion.

"The idea that mere bigness is reprehensible is even contrary to the natural law. There is not a thing that anyone plants or breeds that he does not expect to grow. It is nature's law that with the proper soil and the proper climatic conditions and proper feed, crops and animals just naturally grow. Yet, here we are facing an economic philosophy that it is unpatriotic to have an ambition to grow, even though such development means continued insurance of greater employment and a better standard of living.

Just because business is big, it does not follow that it makes the highest percentage of profits, Mr. Heimann says in discussing this general theory further. He points out that the total percentage of profits of big business, because of the capital investment required, is anything but extraordinary.

"In periods of adversity it is particularly true that big business is hard-pressed to move with the facility necessary to keep in the black," Mr. Heimann says. "In the business reaction that will sooner or later be upon us, observe how the well managed small business more than holds its own while the larger organization flounders in red ink. There are many reasons for this aside from the matter of speed of decision by management in the smaller organization, or the ability to adjust quickly to a new situation. Not the least of reasons is the fact that small business is a beneficiary of the research, production and sales programs of the larger operations in its field.

"When you think of the problems big business will face in the first adverse economic period you can understand why large organizations should be judged on their record, and given encouragement to prepare to meet the crisis which sooner or later they will have to face."

Forest Fire Losses May Cancel Pulp Mill Plan

TORONTO, Ont.—As a result of recent forest fires in Northwestern Ontario, the pulp mill project of Huron Forest Products Co., on which estimates were being prepared, will be delayed until engineers have made a survey of damage to the timber limits. The company, which was formed several years ago to take over the lumber business and sawmill of the J. J. McFadden Lumber Co., at Blind River had contemplated building a pulp mill which was expected to cost in the neighborhood of $10,000,000 and preliminary work was under way for the project. However, latest reports state that this work has been put aside and it is feared the job may be abandoned altogether if the damage to the limits is serious.

Clapp Joins Hobson Miller Sales Organization

NEW YORK—Reid Clapp has been appointed to the New York City sales staff of the Hobson Miller Paper Co., Inc.

Baker Lauds National Waste Paper Committee

NEW YORK—Colley S. Baker, director of the Eastern Conservation Committee of the Waste Paper Consuming Industries on July 10 lauded the National Waste Paper Committee's recently announced 11-point program.

Features of the program are as follows: (1) To apply for a reduction in freight rates through experienced traffic counsel. (2) To apply for a reduction in ocean freight rates, also through experienced traffic counsel. (3) To adopt fair trade practices. (4) To keep the trade fully informed on prevailing market conditions. (5) To provide legal protection against unfair and unwarranted attacks against the industry and its member. (6) To provide legal representation in Washington for the industry. (7) To organize the waste paper industry on a national basis. (8) To treat with labor and labor relations. (9) To direct public relations publicity. (10) To endeavor to develop new uses for waste paper. (11) To aim for sounder and more satisfactory relations between waste paper dealers and mills."

"The National Waste Paper Committee, as announced," Mr. Baker points out, " is as follows: Paul Joseph White, Chairman, (North East); Stuart Sutphin, Vice Chairman, (Ohio Valley); Prentice Christian (West of Rocky Mountains), David M. Dickson, President of the Waste Paper Institute, (South East), John Letellier (South), Harry Resnick (Mid-South), Harold Shilling (Great Lakes), Ernest Wilcox (Mid-West).

"The Eastern Conservation Committee, representing the Eastern consumers of waste paper and maintained by approximately 40 of the nation's leading manufacturers of paper and paperboard, takes great pleasure in felicitating the Waste Paper Industry upon the formation of the National Waste Paper Committee and its objectives," Mr. Baker continued. "The members of the National Waste Paper Committee may be assured of the cooperation and support of the Eastern Conservation Committee, which was created for the purpose of giving service to dealers and mills with their waste paper problems, in their worthy objectives."

Mead Offers Trees, Free

NEW YORK—To stimulate everyone concerned with paper to think and do something about helping America save her forests, Mead Corp. in the current issue of *Better Impressions,* makes the offer:

"We'll send you a tree . . . absolutely free!"

"Paper grows on trees, and if you are interested in printing, advertising, publishing, packaging, or any of the other industries that depend on paper, you should be interested in trees," the announcement said.

The reader of the house organ has merely to send in a business reply card, and Mead will send an evergreen seedling, two years old.

The announcement said that if the request is received in hot weather, the order will be held up until the fall.

Pointing out that while the tree may be only six inches high when received, the statement said that with reasonable care and luck it will grow in time to 50 feet or more in height.

The offer ties in with an editorial by Hubert S. Foster entitled "Stop Forest Fires! Control Cutting!", the editorial is accompanied by a color photograph of flames raging through timberland.

"A product of the forests, paper, in a sense, can return to the forests and help to save them from the depletion which, the Forest Service of the U. S. Department of Agriculture insists, is now faster than growth," Mr. Foster states.

National Containers Corp. Acquires Minneapolis Plant

NEW YORK—Samuel Kipnis, president of the National Container Corp., on July 6 disclosed acquisition by the newly organized wholly-owned subsidiary National Container Corp. (of Minnesota), of the sheet plant located in Minneapolis, formerly operated by Kraft Containers, Inc.

At the same time arrangements were made with the former operator of the plant to act as selling agent in the Minneapolis territory.

This is the tenth converting plant in the chain of plants operated by National Container Corp., all of which receive their supplies of kraft board from the firm's four mills at Jacksonville, Fla., Big Island, Va., Ontonagon, Mich., and Tomahawk, Wis.

The nine other converting plants are located at Long Island City, N. Y.; Jacksonville, Fla.; Philadelphia; Bradford, Pa.; Aurora, Ind.; Chicago; Tomahawk, Wis.; Oakland and Los Angeles, Calif.

B.F.D. Shifts Personnel

PLATTSBURG, N. Y.—Diamond Match Co., B.F.D. Division, on July 1 made several changes in local plant personnel.

P. D. Bradley became superintendent of operations on a consulting and advisory basis; E. C. Keyser became general superintendent; J. W. Wettenmann, paper mill superintendent; A. T. Harding, Jr., converting superintendent; Alex Wodjenski, night superintendent; and William Wodjenski, tour foreman in the paper mill.

At the Ogdensburg plant Corwin Humbert has been engaged as mechanical engineer succeeding Carlton Fahey who has resigned to go with Weyerhaeuser at its Longview, Wash., mill, and John Kaluta has been engaged as a designing engineer for new development work.

Consolidated Improvement Program Starts

MONTREAL, Que. — The Consolidated Paper Corp. has started improvements to its Belgo pulp and paper mill at Shawinigan Falls, Que., which will cost about $175,000. Included are a $100,000 boiler plant enlargement and two 96-ft. acid towers costing together about $75,000. Installation of additional high pressure pulverized coal boilers at Wayagamack and Belgo mills and construction of a new pulpwood unloading pier at Port Alfred were recently announced by Consolidated as the major items in its 1948 capital program.

Oregon Fiber Milk Container Differential Quashed

SALEM, Ore. — The state supreme court of Oregon has ruled that milk dealers in the state are not compelled by law to charge more for milk delivered in fibre containers than for milk delivered in glass bottles.

In reversing the decision of a lower court on a suit brought by the Sunshine Dairy of Portland, the tribunal declared that the state director of agriculture exceeded his authority in a 1945 order requiring a one-cent upcharge on milk sold in fibre containers.

Anderson Joins Dizon

ROCKFORD, Ill.—Rodney K. Anderson has joined the sales force of the local branch of the Dizon Paper Co. and will take over part of the Rockford trade as well as adjacent area outside the city of Rockford.

The company is remodeling the office at the Rockford branch and increasing warehouse and storage facilities. Raymond C. Pierce is in charge of the branch."

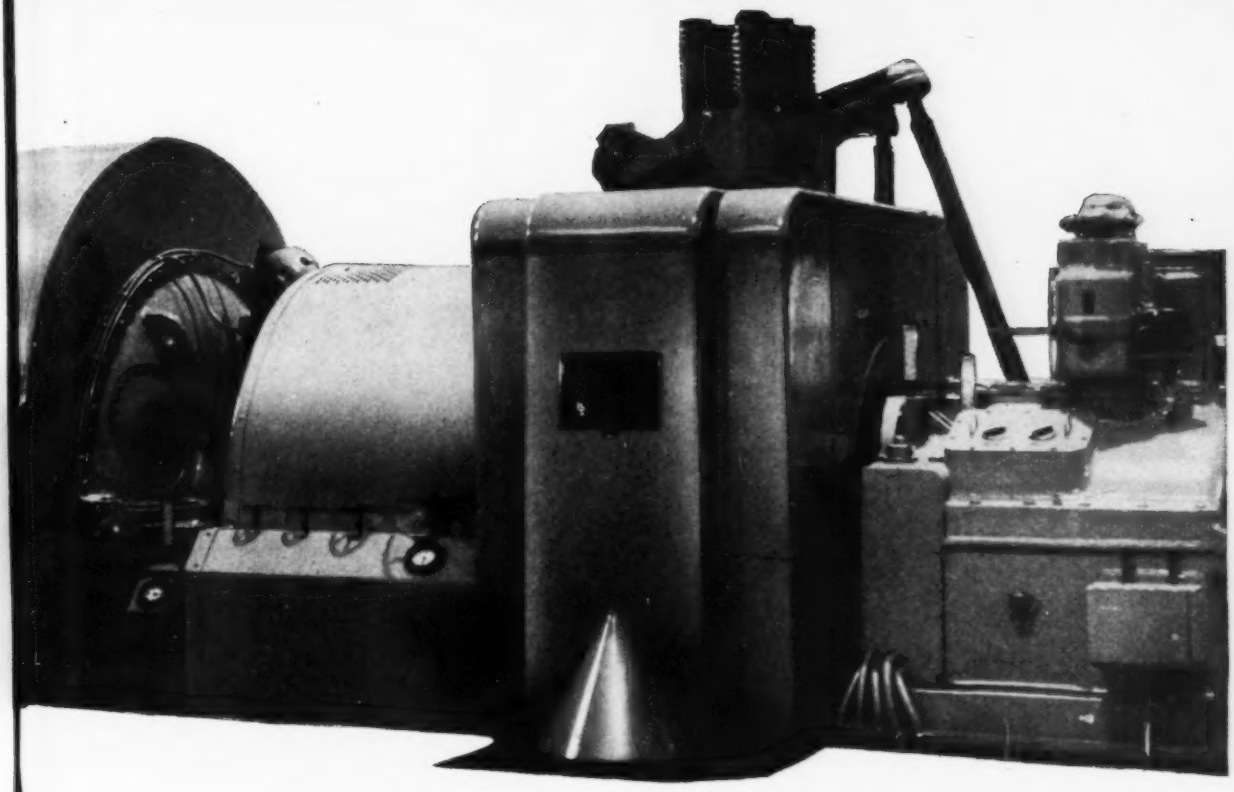
Farrah to Container Labs.

CHICAGO — Container Laboratories, Inc., has added George A. Farrah to its local office staff. Mr. Farrah, who graduated from Syracuse University College of Forestry where he majored in pulp and paper manufacture, resigned his position as technical superintendent at the Manayunk plant of the Container Corp. of America to join the Laboratories.

Osborn Joins Marcalus

LINCOLN, N. H.—Richard O. Osborn joined the marcalus Mfg. Co. here on July 2. Mr. Osborn comes to his new post after 25 years with the Newton Falls Paper Co., Newton Falls, N. Y., where he was plant engineer.

BE KEPT GOING



Sinclair SINTURLITE OILS have set an enviable performance record for standing up in the grueling day in and day out grind of continuous turbine service. SINTURLITE'S inherent high oxidation stability is strengthened by proven additives. Sludge formation and acid value are checked. Protection against rust trouble is assured because SINTURLITE OILS are rust inhibited. All the lubricating requirements prescribed by the turbine builders are provided by SINTURLITE—with margins to spare. Try SINTURLITE in your turbines.

INDUSTRIAL OILS

FOR LUBRICATION COUNSEL, OR YOU MAY WRITE TO SINCLAIR REFINING COMPANY, 630 FIFTH AVENUE, NEW YORK 20, N. Y.

Everett Pulp & Paper Co. Adopts Retirement and Insurance Plan

NEW YORK—W. J. Pilz, president of the Everett Pulp & Paper Co., informs *Paper Trade Journal* that his organization has established a retirement and insurance plan for its personnel which was developed by the Equitable Life Assurance Society of the United States.

When the plan was inaugurated, the Everett Pulp & Paper Co. presented it in detail in a large paid advertisement in the July 1 issue of the Everett (Wash.) *Daily Herald*.

Reproduced in the advertisement was a letter from Mr. Pilz to employes, which stated in part: "The cost of this plan necessitates a considerable outlay by the company as we agree to pay the entire cost of providing the Past Service Retirement Incomes and a substantial part of the cost of Future Service Retirement Incomes, and of the Group Life Insurance.

"To give you the maximum assurance of safety and security, the administration of this plan has been placed in the hands of The Equitable Life Assurance Society of the United States. All payments of retirement income or death benefits will be made directly to the employe or to his beneficiary by the Equitable.

"Under the Retirement Plan every eligible employe may receive a reasonable life income upon his retirement from active service. The benefits provided under this Plan are entirely independent of and in addition to the benefits provided under the Federal Social Security Act.

"Part A—Retirement Plan—will become effective July 1, 1948; and Part B — Group Life Insurance Plan — will become effective June 1, 1948, provided at least 75 percent of those eligible subscribe by these dates.

"The company is glad to provide this plan in recognition of the large number of our employes who have given many years of continuous, conscientious service, and also as a worthwhile incentive for your continued effective contribution to our organization, not only on the part of our present employes but to those who become associated with us in the future. This is all part of the plan which we have had for many years to make working conditions in our institution as favorable and as attractive as possible."

General Takes Over Hudson Inventory

NEW YORK—General Paper Products Co., on July 10 told *Paper Trade Journal* that it had taken over the stock and inventory of the Hudson Paper Co., of 2129 Amsterdam avenue.

Nekoosa Edwards Completes Research and Development Lab.

PORT EDWARDS, Wis. — Nekoosa-Edwards Paper Co. has completed the finishing touches to the new NEPCO research and development laboratory in its mill office building.

Facilities of the new laboratory include a Kewaunee metal laboratory bench with metal drawers and cabinets and a Kemrock top. Hot and cold water, gas, AC current and steam are supplied at convenient outlets along the full length of the working area.

The laboratory benches are equipped with individual up-draft fume hoods. The section is fluorescent lighted and air conditioned. Glass block windows provide daylight and acousti-tile ceilings aid in the elimination of noise. Floors are of resilient asphalt tile and heating is provided by convector radiators.

In addition to the construction of the new research and developmental laboratory the general laboratory was modernized. A photographer's darkroom is a feature.

The laboratories are under the direction of Dr. T. A. Pascoe, technical director, with Dr. H. W. Rowe, assistant technical director, having responsibility for the research and development group.

Mill Safety Records Improving

CHICAGO—The 25th consecutive safety contest for the paper indutry began on July 1, and will end on June 30, 1949. The contest ending June 30 this year saw 305 mills and re-manufacturing plants participating, which represents slightly over half the total paper industry membership in the National Safety Council.

Contesting units are grouped according to type of operation and size, and are then ranked in the order of their frequency rates within their own groups.

Trophies and certificates are awarded by the National Safety Council to the three ranking winners in each group of contesting units. There are four groups in the pulp and paper mill division, and three groups in the re-manufacturing division. These groups are made up of units operating within averages of specified man-hours monthly. The rules governing these contests are prescribed by the executive committee of the Pulp & Paper Section.

Companies manufacturing paper and paper products, which had a lower accident frequency record for the year 1947 in comparison with their 1946 record are listed in the order of the percentage reduction:

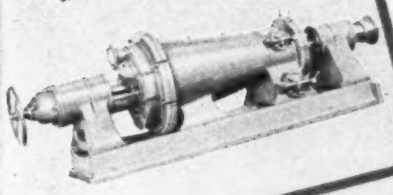
Percentage Reductions in Accident Frequency During 1947

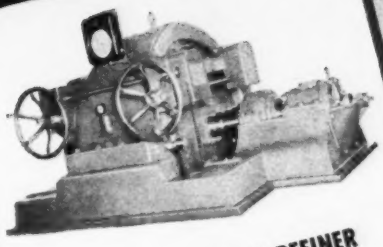
Company	*Location*	*Type of Operation*	*% Reduction In Accident*
International Paper Co.	Mobile, Ala.	Bag Div.	90
Scott Paper Co.	Hoboken, N. J.	Wax Paper Div.	82
Hollingsworth & Vose Co.	West Groton, Mass.	Paper	81½
Gaylord Container Corp.	Bogalusa, La.	Bag Div.	70½
National Container Corp.	Jacksonville, Fla.	Box Mfg.	69
Florida Pulp & Paper Co.	Pensacola, Fla.	Paper	66
Southland Paper Mills, Inc.	Lufkin, Tex.	Woods Opr.	66
Flintkote Co.	Meridian, Miss.	Wallboard	65
E. B. Eddy Co.	Ottawa, Ont.	Paper	63½
National Container Corp.	Ontonagon, Mich.	Paper	61
Canada Paper Co.			
Howard Smith Paper Mills Ltd.	Windsor, Ont.	Paper	59
H. Wolff Book Mfg. Co.	New York, N. Y.	Paper	56
Halifax Paper Co.	Roanoke Rapids, N. C.	Paper	53
International Paper Co.	Camden, Ark.	Paper	51
West Va. Pulp & Paper Co.	Charleston, S. C.	Paper	51
The Mead Corp.	Sylva, N. C.	Paper	50
National Container Corp.	Jacksonville, Fla.	Paper	49
National Container Corp.	Big Island, Va.	Paper	48
Container Corp. of America	Fernandina, Fla.	Kraft Pulp	46
International Paper Co.	Panama City, Fla.	Paper	45
Mead Corp.	Kingsport, Tenn.	Paper	43
Camp Mfg. Co.	Franklin, Va.	Paper	43
Gaylord Container Corp.	Bogalusa, La.	Box Div.	40½
Mead Corp.	Lynchburg, Va.	Paper	39
Sonoco Products Co.	Hartsville, S. C.	Paper	36
Southland Paper Mills, Inc.	Lufkin, Texas	Newsprint	34
International Paper Co.	Mobile, Ala.	Paper	33
Hollingsworth & Whitney Co.	Mobile, Ala.	Paper	29
Howard Smith Paper Mills Ltd. Beauharnois Division	Cornwall, Ont.	Paper	24½

for STOCK PREPARATION

JONES JORDANS

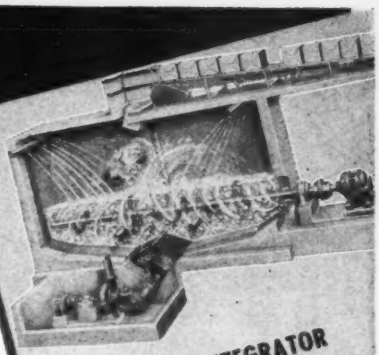
Ruggedly and accurately made, insuring continued fine performance with ease of control and simple maintenance.





JONES DOUBLE-DISC REFINER

A high capacity machine with greater output per unit.



LIEBECK DISINTEGRATOR

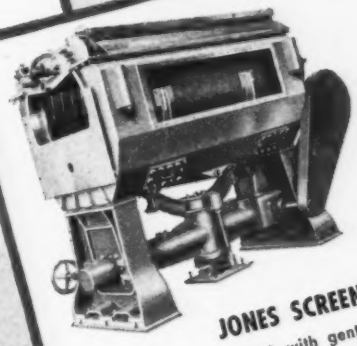
A versatile machine for pulping broke and pulp. Can be fitted into unusual mill locations.

JONES HIGH-SPEED REFINER

Several hundred installations have proved the efficiency and flexibility of this famous machine.

JONES-BERTRAMS PATENT BEATER

The best for maximum fibre development with minimum power consumption.



JONES SCREEN

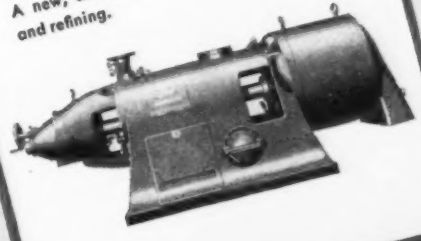
Efficient cleaning of stock with gentle action and ease of operation.

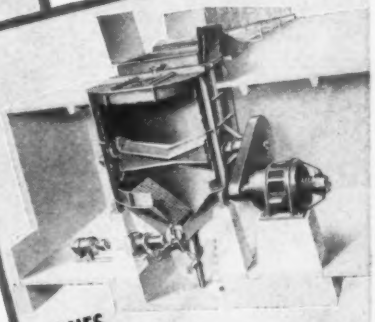
JONES AGITATOR

"Packaged" units—simplified and efficient—with ease of installation and low maintenance.

JONES COMPOSITE

A new, advanced design unit for beating and refining.





JONES PULPMASTER

The advanced pulper with two-stage action combining refining with pulping.

Descriptive Bulletins, detailed information, and quotations furnished for the asking.

Jones

E. D. JONES & SONS COMPANY-PITTSFIELD, MASS.
Builders of Quality Machinery for Paper Mills

MANUFACTURERS AND DISTRIBUTORS IN CANADA: WATEROUS LTD., BRANTFORD, ONT.

WHEN SUPERINTENDENTS MET IN GREEN BAY

PITCH SYMPOSIUM PARTICIPANTS. When the Northwestern Division of the American Pulp & Paper Mill Superintendents Ass'n., held its symposium at Hotel Beaumont, Green Bay, Wis., during the June 18-19 meeting, important roles were taken by the three men pictured above. They are, left to right, N. Malcove of the Northern Paper Mills, Green Bay; Walter Sherman of the Flambeau Paper Co., Park Falls, Wis., and C. M. Koon of the Munising Paper Co., Munising, Mich.

Container Corp. Adds Linerless Ice-cream Carton

CHICAGO—Container Corp. of America has added linerless gallon and half-gallon ice cream cartons to its line of factory-fill packages. Made of extra heavy paperboard in one-piece construction, the cartons are said to stand up square and rigid without distortion in the automatic filling operation. Both sizes are proportioned to fit standard size cabinets and for storage in combination with each other, saving approximately one-third of the space needed for round containers.

Hudson Elects Mittendorf To Vice-Presidency

NEW YORK—T. H. Mittendorf was elected vice-president of the Hudson Pulp Corp. on July 1. Mr. Mittendorf will have charge of sales of gummed tape, kraft wrapping paper and bags, comprising principally the items made at the company's Palatka, Fla., plant.

To provide closer contact for Mr. Mittendorf with middle-west paper merchants, new offices of the corporation will be located at 360 North Michigan avenue, Chicago.

Butterworth's Smalley Returns to England

BOSTON — Colonel Edgar Smalley, managing director of Edwin Butterworth & Co., Inc., paper stock dealer, Manchester, England, and a director of E. Butterworth & Co., Inc., Boston, who has been visiting in this country for five weeks, accompanied by Mrs. Smalley, has returned to England. While here they spent five days at the summer home of Horace Binney Sargent, president of E. Butterworth & Co., Inc., at Chatham, Mass.

Starbuck Buys Grant Factory

NORTHAMPTON, Mass. — Atty. Edwin P. Dunphy of Northampton, as trustee in bankruptcy for Gerald L. Grant, former proprietor of the Pioneer Publishing Co., in Leeds, has announced the sale of the Grant factory in Leeds to the Starbuck Mfg. Co., Inc., of Greenfield, manufacturer of paper draperies, of which Charles E. Tiley is president.

The new owners plan to take possession of the plant in the near future, and to begin manufacture in the early autumn, employing about 40 persons.

"Esteemed Contemporary"

NEW YORK — Commenting upon the 75th Anniversary issue of PAPER TRADE JOURNAL, recently mailed to all subscribers, *The Pulp & Paper Magazine of Canada* said in its June issue under the title of "Our Esteemed Contemporary," "Seventy-five years is a long time, and that is the span in years of service to this industry of the PAPER TRADE JOURNAL. We might refer to good friends as our revered contemporary, since this magazine is only 45 years old — anyhow — more power to your pen, P.T.J., and continued prosperity."

Letters

Dear Heitz:

I want to congratulate you on the improved form and also the material in the Paper Trade Journal since you have taken over the editorship. You are doing a good job.

With kindest personal regards, I am.

JOHN L. RICHEY
Secretary-Treasurer
Paper & Twine Ass'n.
Cincinnati, Ohio

Bailey Reshuffles Ten

CLEVELAND—The Bailey Meter Co., designer and manufacturer of power and process instruments and controls has appointed two new branch office managers.

H. T. Sawyer, formerly manager of the Seattle office, is now manager of the Buffalo office, succeeding the late Mr. S. W. Nelson, and K. E. Atwood has replaced Mr. Sawyer at Seattle.

The company also discloses the following branch office assignments: R. E. Erickson from Cleveland main office to Philadelphia office; F. J. Ghezzi from Cleveland main office to Schenectady office; F. D. Krusemark from Cleveland main office to Denver office; J. R. Brennan from Cleveland main office to Buffalo office; R. R. Beal and D. A. Gearhart from Cleveland main office to St. Paul office; A. Martin from Cleveland main office to Atlanta office; and L. E. Bartel from St. Louis office to Kansas City office.

Lukens Gordon Retires

COATESVILLE, Pa. — F. H. Gordon, vice-president of the Lukens Steel Co., who started as an office boy with the concern 53 years ago, retired June 30 from active work. His future plans were unannounced. A dinner in his honor was given at the Coatesville Country Club, June 28, by business associates and Lukens executives at which he was presented with a sterling silver tea service, on behalf of Lukens board of directors, and with two sterling silver bowls by his business associates. Charles Lukens Huston, Jr., vice-president and executive assistant to the president, made the presentation on behalf of the board of directors, while J. Frederic Wiese, vice-president of the company, presented the platters on behalf of Mr. Gordon's business associates.

Esgate Now Consultant

NEW YORK — Ernest E. Esgate, former logging engineer for the American Pulpwood Ass'n., has established the firm of E. E. Esgate Associates, consultants, with offices at 12 East Forty-First Street, to specialize in methods of operation and equipment for the pulpwood industry.

A native of the Pacific Northwest, Mr. Esgate was employed by private interests in the lumber industry and by the U. S. Forest Service in that region for several years before moving to the New England region in 1938 to assist in the salvage of hurricane-damaged timber as a production specialist. He served with the Army Engineers as a civilian and as an officer from 1941 to 1947. Associates wil include technicians in the fields of materials handling and equipment design.

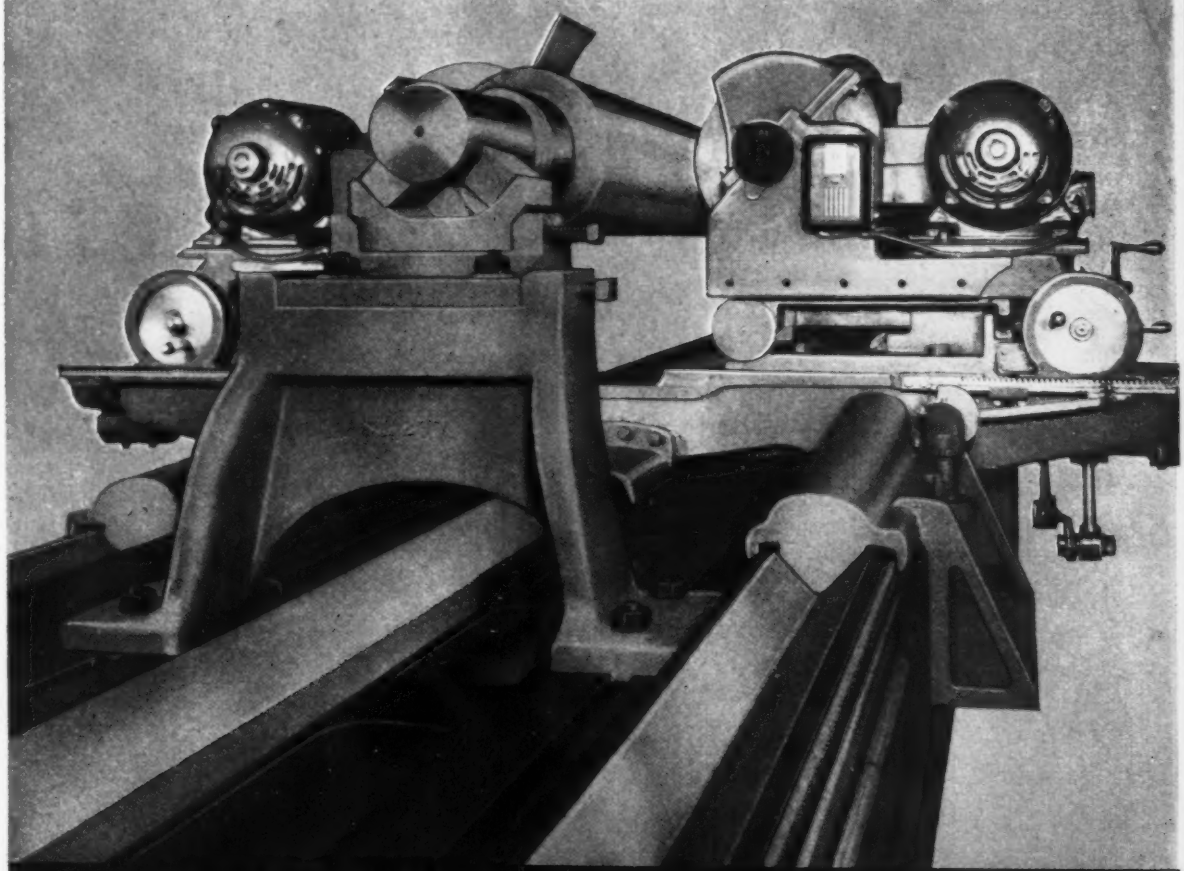
Stebbins in Textile Tower

SEATTLE—Stebbins Engineering Co., is now located at 1504 Textile Tower building.

LOBDELL

improved PAPER MILL ROLL GRINDER

New Low Head Wheel Carriage reduces vibration...enables operator to maintain a more accurate check on the grinding operation...assures greater accuracy and a higher degree of finish on the face of your rolls . . . permits faster, easier handling of rolls. Write for detailed information about this improved Lobdell Paper Mill Roll Grinder.



LOBDELL COMPANY *ESTABLISHED 1836* WILMINGTON 99, DEL.

EXPORT DEPARTMENT

DREXEL BLDG., PHILADELPHIA 6, PA., U.S.A.—CABLE ADDRESS: LOBDELLEX

Two Likely Amendments To Taft-Hartley Law

NEW YORK—Among proposed amendments to the Taft-Hartley Act, two may receive early attention when Congress meets again next year, E. W. Tinker, executive secretary of the American Paper & Pulp Ass'n. said in a bulletin to members on July 8. The amendments to which Mr. Tinker alluded were one to place a possible ban or penalty for strikes intended to force employers into a violation of the Act, and another requiring that unions be forced to make up back-pay for workers kept off their jobs by mass picketing, coercion, and violence.

"Pressure for the first amendment above is coming from employers who are faced with strikes to compel illegal shop contracts, broad union powers of discharge, etc.," Mr. Tinker said.

"The second amendments," he continued, "would be in accord with General Counsel Denham's campaign to make unions as responsible as employers for violations of the NLRA. Denham's contention that unions should be forced to make up back-pay for workers kept off their jobs by mass picketing, coercion, and violence was rejected by the trial examiner in the case involving the United Furniture Workers of America, decided on May 20, 1948. The position of the general counsel was that there is just as much reason for making a union pay nonstrikers for time they lose because of a union's unfair practices as there is for requiring an employer to reimburse employes he has unlawfully discharged. Should the NLRB sustain the trial examiner's ruling it would appear that legislative revision of the Act would be necessary in order to impose such a liability on a union."

Two Alaskan Mills Under Plans

SEATTLE — The Ketchikan Pulp & Paper Co. last week exercised its option to construct a mill at Ward's Cove, Ketchikan, Alaska. Planned capacity of the mill is 250 tons per day, construction to be completed in five years.

Incorporation papers are reported filed in Juneau, Alaska, for the Industrial & Engineering Corp., which plans construction of a pulp and paper mill in Sitka, for 150 tons daily capacity.

New Haven Advances Wicks and Cowles

NEW HAVEN, Ct. — New Haven Pulp & Board Co. has appointed Herman C. Wicks as sales manager of the Paperboard Division. Mr. Wicks has been with the company since 1922. Ellsworth W. Cowles, who has been a vice-president of the company for many years and sales manager of the Paperboard Division, has been advanced to the post of sales manager of the Carton Division.

Newhouse Brown Distributor

ADAMS, Mass. — The Newhouse Paper Co. has been appointed distributor of L. L. Brown's cotton fibre content linen ledger, Forward linen ledger, Greylock ledger, Escort ledger and Advance bond in Minneapolis; Des Moines and Dubuque, Iowa; and Moline, Ill.

Ross Celebrates

MONTREAL—To celebrate its twenty-fifth year in business in Canada, Ross Engineering of Canada, Ltd., was host to some 200 employes and guests at a silver anniversary party held early in June. An extensive program of entertainment and festivities had been arranged by F. W. Hooper, vice-president, and E. G. Wakeling of Ross Engineering of Canada to cover five days of continuous activity from June 3 to June 7. Among those who attended were more than 100 officials and employees of the company's affiliates in the United States — J. O. Ross Engineering Corp. and John Waldron Corp.

PAPER PROCESS MAKES ASBESTOS INSULATION

QUINTERRA asbestos-base completely inorganic electrical insulation is being made by a special paper making process at the Johns-Manville plant at Tilton, N. H., which permits manufacture ranging from a tissue-thin 1.5 mil to 20 mils in thickness.

Nepco's Gavin Given New England Territory

HARRISON, N. J.—William J. Gavin has been appointed a member of the New England sales force for the industrial division of the Nepco Chemical Co. and its subsidiary, Metasap Chemical Co. Previously, Mr. Gavin was associated with the company's Cedartown, Ga., plant.

He succeeds Joseph E. Connell recently transferred, and will work directly under Harold J. Waldren, district manager. Mr. Gavin's territory includes northeastern Massachusetts, Maine and eastern New Hampshire.

Diamond Alkali Names Crossley Treasurer

CLEVELAND—Arthur W. Crossley has been elected treasurer of Diamond Alkali Co., succeeding William H. Evans, who, in addition to his duties as general manager of Diamond's silicate-producing plants at Cincinnati, Chicago, Dallas, Jersey City, Lockport, N. Y., and Emeryville, Cal., has been acting-treasurer since March 2. Mr. Crossley for the past three years has been assistant general manager of the Potomac Electric Power Co., Washington, D. C.

Manhattan Rubber Appoints Western District Men

PHILADELPHIA — A. L. Hawk has been named assistant to the Western District manager in Chicago, and R. B. Hazard as manager of distributor sales, Western District, by Raybestos-Manhattan, Inc., Manhattan Rubber Division, Passaic, N. J.

Millett's Curtis Advanced

NEW YORK — Charles S. Curtis, advertising and promotion manager of the Millett Corp., a subsidiary of the Gilman Paper Co., has been elected vice-president in charge of sales, advertising and promotion.

Warren's Gray Vacationing On Cape Cod

BOSTON—Edward B. Gray, treasurer of S. D. Warren Co., is passing a vacation at Harwichport, Cape Cod, expecting to return July 26.

$25,000 to Chillicothe Hospital

CHILLICOTHE, Ohio—Chillicothe Paper Co., has subscribed $25,000 to the $750,000 building fund of the Chillicothe Hospital.

The business of growing trees for sustained yield is like always aving money in the bank. To insure perpetual supply, modern restry puts in what it takes out. R. K. Ferguson PRESIDENT

ST. REGIS PAPER COMPANY

We grow plastics!

Trees bloom for St. Regis—into the charmingly colored and patterned plastic we call Panelyte! This decorative plastic, as well as a wide range of structural plastics, is made from multiple plies of resin impregnated paper. You will find homes and businesses everywhere made more attractive, with Decorative Panelyte.

PANELYTE
THE STRUCTURAL PLASTIC

Store displays are made more attractive with bright, colorful, sanitary and wear-resistant Panelyte.

Panelyte makes an ideal dinette table surface—easy to clean, hard to mar and resistant to stains.

Where food and drinks are served, Panelyte's gleaming, hard surface is a "must" for reasons of sanitation.

Panelyte is easy to clean and to keep clean. It is resistant to stains — even boiling liquids.

Panelyte is available in lasting colors and patterns which are attractive and harmonious in your decorating scheme.

Panelyte's "harder to mar" surface withstands cigarette burns and alcohol.

ST. REGIS PAPER Company

230 PARK AVENUE, NEW YORK 17, N. Y.

Quick Facts ABOUT ST. REGIS...

1,800,000 ACRES OF TIMBERLAND	MILLS & PLANTS IN 30 LOCATIONS	ASSETS OVER 130 MILLION DOLLARS	13,115 EMPLOYEES	OVER 15,000 STOCKHOLDERS

PRINTING PUBLICATION AND CONVERTING PAPERS

Magazines—Mail Order Catalogs—Telephone Directories—Books
Coated and uncoated for offset, letterpress, roto. Specialty and converting papers

PAPER FOR MULTIWALL BAGS

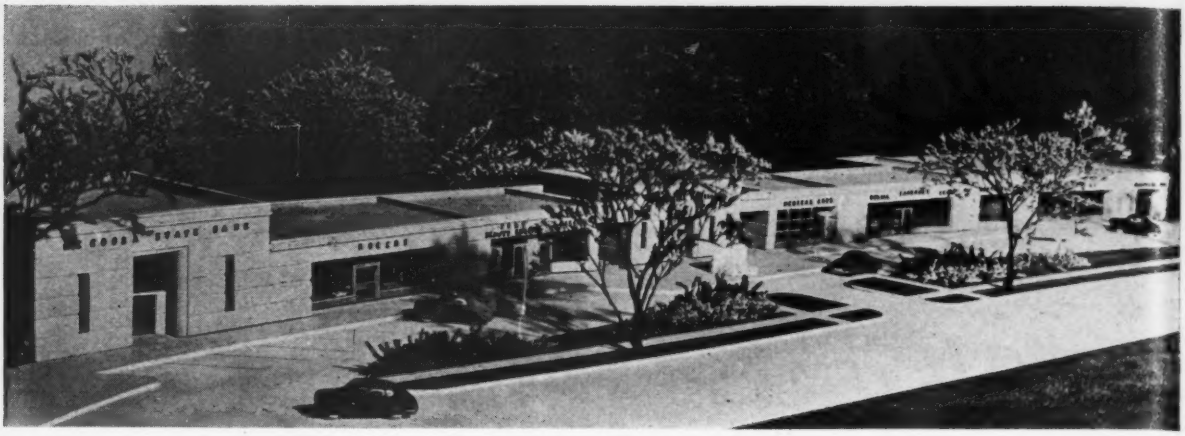
PAPER FOR PANELYTE

Kemnot, Fertilizer, Limestone, Chemicals, Feed, Flour, Sugar, Potatoes—and more than 400 other products.

The structural laminated plastic for Refrigeration, Electrical, and Radio Industries. Decorative Panelyte for table tops and furniture.

WOODPULP—for sale to converting mills

PACKAGING SYSTEMS—Bags and Bag Filling Machines



NEKOOSA EDWARDS PAPER CO. ERECTING SHOPPING CENTER

Model of the shopping center, being built by the Nekoosa-Edwards Paper Co., in Port Edwards, Wis. . . . Construction began June 23 . . . Built with a concave front, 408 feet long and with an average depth of 50 feet, the building will house nine commercial units and will completely replace the shopping district of the paper mill town with one of the newest and most modern shopping centers of its kind in the country . . . Business establishments include all the present merchants in the village, plus a bank and a hardware store.

Wardenburg Heading DuPont's Pigments Dept. August 1

WILMINGTON, Del.—The du Pont Co. on July 8 announced appointment of Frederic A. C. Wardenburg, manager of its European office in London, as director of sales of the pigments department here, effective August 1. He succeeds Dr. D. H. Dawson, whose promotion from director of sales to assistant general manager, was recently announced. Dr. Charles J. Harrington, who has been technical representative in the London office since January, becomes manager of that office.

Ross' S. W. Fletcher Honored

NEW YORK—S. W. Fletcher, president of the J. O. Ross Engineering Corp., was guest of honor at a surprise luncheon given for him by the employes of the company's New York office on July 1, the same day on which Mr. Fletcher joined the organization in 1923. W. K. Metcalfe and H. G. Rappolt were in charge of arrangements and R. Sadwith served as toastmaster. Mr. Fletcher was presented with a motion picture projector screen by the employes in token of their esteem, the presentation being made by Richard Schultz.

Worthington Ups Anderson

HARRISON, N. J.—The Worthington Pump & Machinery Corp. on July 6 appointed Harold T. Anderson assistant to the general sales manager in charge of sales production relations.

Paisley Data Sheet Simplifies Adhesive Specifications

CHICAGO — Since 1944, when the Paisley Products Co. first introduced its adhesive operation data sheet, over 92 percent of adhesive problems and questions submitted to the Paisley Laboratories have been accurately and satisfactorily answered, according to Earl C. Lenz, general sales manager. The data sheet helps the adhesive buyer to supply pertinent information so that accurate diagnosis can be made by the Paisley organization of his specific needs.

Stern Heyden's Western Rep.

NEW YORK—Heyden Chemical Corp. has named A. George Stern as sales representative in the Rocky Mountain region and Pacific Coast states.

Prior to joining Heyden, Mr. Stern was employed by the Westvaco Chemical Corp., the U. S. Bureau of Mines, the A. R. Maas Laboratories and the Barrett Co. He is a chemical engineer and a graduate of Columbia University.

For the present, the Heyden Chemical Corp. office will be at 420 Market Street, San Francisco 11.

Pierpont Succeeds Kirkpatrick As Norton Sales Manager

WORCESTER, Mass.—Harlan T. Pierpont, Jr., has begun his new duties here as sales manager of the Norton Co., refractories division, succeeding Robert Kirkpatrick, whose retirement was announced after 29 years' service with the company. With the company since 1935, he has been a Norton abrasive engineer for nearly 11 years, most recently in Flint, Mich.

Smith Succeeds Ryan As Monsanto (Can.) Ltd., Prexy

ST. LOUIS, Mo. — Arnold H. Smith was elected president of Monsanto (Canada), Ltd., with offices in Montreal, William M. Rand, president of Monsanto Chemical Co., disclosed.

Mr. Rand stated that Leo G. Ryan, who has been largely responsible for the growth of the Canadian company and who has been president since 1933, would remain as chairman of the board.

Precipitation Balances Evaporation Exactly

WAUSAU, Wis. — Precipitation and evaporation in the Wisconsin river basin north of Wisconsin Rapids were exactly even during the week ending Sunday, July 4, according to a report by the Wisconsin Valley Improvement Co. They average .8 of an inch. Average precipitation for this part of the basin from January 1 to July 4 was 9.35 inches, or 5.18 inches less than the 59-year average.

Total reserves in the river reservoirs as of July 4 were 8,172,000,000 cubic feet, slightly more than one-half the reserves on that date in any year in the past decade with the exception of 1941, when the reserves on July 4 were 12,287,000,000 cubic feet, or 50 percent more than the reserves July 4 this year. Reservoirs were filled to 48.02 percent of capacity.

Morrilton Paper Co., New Arkansas Merchant

MORRILTON, Ark. — The Morrilton Paper Co., believed to be the first one of its kind between Little Rock and Ft. Smith, has been opened by John B. Gordon and John Patton to do a paper merchant business in the five counties of which Morrilton is the geographic center.

John W. Brown Named National Gypsum GSM

NEW YORK — John W. Brown of Dallas, Texas, has been appointed general sales manager of the National Gypsum Co., Dean D. Crandell, vice-president in charge of dealer sales, stated on July 13. At the same time, James J. Ryan of Kenmore, N. Y., was named to the newly created position of general commodity manager.

Experimentation

LIFEBLOOD OF PROGRESS

Without the friendly cooperation of the mills the idea of a chemically treated line of felts would have died aborning. Because to the mills experimentation is the very lifeblood of progress, the greatest forward step in felt manufacture in forty years became a reality. To those mills our sincere appreciation.

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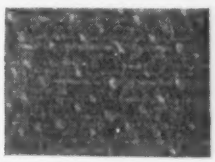
Untreated bottom felt after term on machine, very much worn.



Orr-Chem on same machine after "use"—felt still in good shape.

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ORR-CHEM

The Importance of Economic Considerations in Wood-Waste Utilization Research

By ROBERT K. WINTERS*

Much work has been done on the economic aspects of wood-waste utilization. Operators of forest-product plants constantly try to reduce costs of raw material and at the same time to increase net profits by its fullest economic use. In this paper, however, I wish to emphasize the importance of economic considerations in selecting, planning, and carrying out research projects in the field of wood-waste utilization.

Practically all forest industries produce a large volume of waste. This can be classified as logging waste and manufacturing waste. Logging waste includes: (1) trees left standing in the woods because of low quality or excessive cull; (2) parts of cut trees left in the woods for the same reasons; (3) trees badly damaged in logging and subsequent slash disposal. Manufacturing waste includes (1) wood material not used in the primary manufacture of lumber, veneer, etc.; and (2) wood material not used in the secondary manufacture of furniture from lumber, plywood from veneer, etc. The effective use of waste is not only an individual plant problem, it is also an industry-wide problem. To the extent that present supplies of lumber and other wood products are short, it is also a problem in which the public at large is interested.

But let's be more specific. Precisely what is included in the term "wood waste"? In practice, a number of concepts are commonly used. The Society of American Foresters, in its *Forestry Terminology*, has defined logging waste and sawmilling waste. Logging waste is "that portion of the tree which has merchantable value, but is not utilized"; sawmilling waste "that portion of the log having a merchantable value which is not utilized." The Society of American Foresters has further defined "merchantable" as follows: "Used to designate the portion of trees or stands which can be profitably marketed under given economic conditions." These definitions are truly definitive only where

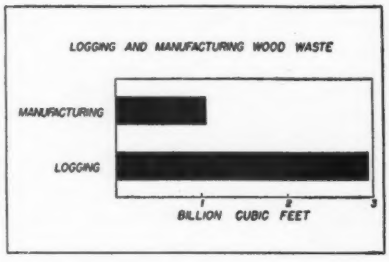

Figure 1.

merchantable value is expressed in terms of a given product, or a definite combination of products. The volume of unused material in a white oak tree 22 inches in diameter may be three times as great when the tree is cut into tight-stave bolts as it would be if a were cut into sawlogs. Actually, few persons in the hardwood regions of the United States would say that tight-stave cutting produced no waste, because all material that economically could be put into tight staves was used. The given white oak tree should be converted into all products that can be made practicably and economically from it. Some operators and foresters have classified as waste only the unutilized material that could be processed economically into lumber. This concept may be valid, if no form of integrated logging or milling for products other than lumber is practicable.

Another concept of waste would include the unutilized material that cannot feasibly be used by such effectively integrated operations as the Crosset Lumber Company at Crosset, Arkansas, the Weyerhaeuser Timber Company at Cloquet, Minnesota, the Goodman Lumber Company at Goodman, Wisconsin, and others. Even this concept will not be static nor too precise. It will vary from one locality to another and within a locality from time to time, depending upon economic conditions and improvements in processing equipment. In the mountainous portions of the West, for example, far removed from the principal consuming centers of the country, timber is large and transportation costs are great. Under such conditions this concept of waste would be entirely different than it would be in the many parts of the East where close utilization of small timber is feasible. With the passing of time, however, the western concept is almost certain to change.

Still another concept of waste includes all material larger than a specified size, regardless of the present feasibility of utilization. This concept more nearly conforms to Webster's definition of waste, which is as follows: "That which has no original value or no value for the ordinary or main purpose of manufacture; parts or fragments of original stock not of a size suitable for use in making the product

(Continued on page 24)

GEOGRAPHIC REGIONS USED IN THIS PAPER

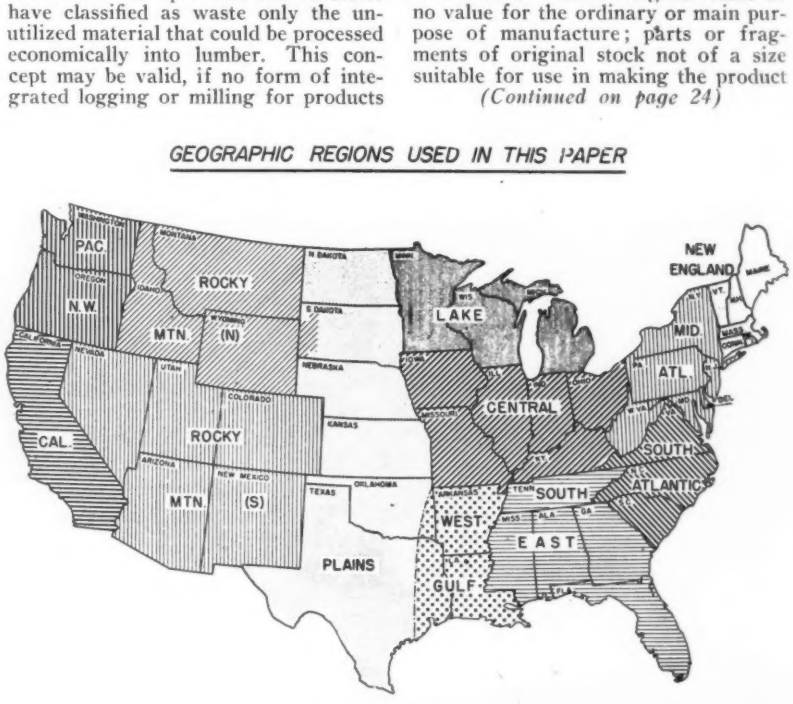

Figure 2.

A generous amount of clear economic thinking by the chemist, engineer, or other specialist is necessary at the time waste-utilization studies are being planned and carried out. Such thinking should almost always include a consideration of the approximate quantity, character, and distribution of the waste that is suitable for the manufacture of given products, the probable cost of the waste at the plant, and the probable selling price of the products. Consideration of these items may eliminate certain studies and permit the concentration of effort on those likely to develop processes that can be useful in plant operation and in wood-waste utilization.

* Chief, Division of Forest Economics, Central States Forest Experiment Station, U. S. Forest Service, Columbus, Ohio.

A paper read at the national meeting of the Forest Products Research Society, Chicago, Ill., March 22-24, 1948.

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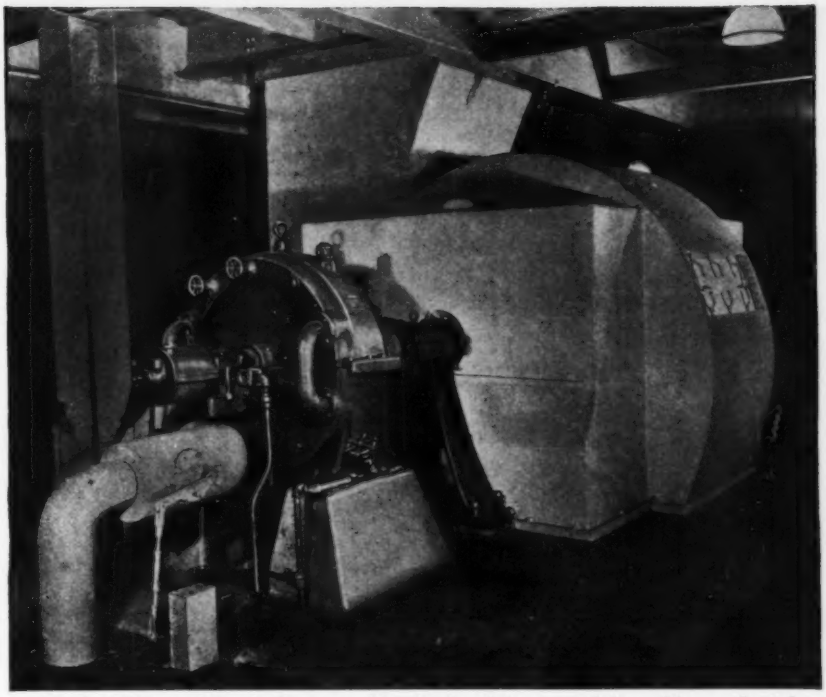

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CUTTING AIR COSTS IN EVERY BRANCH OF INDUSTRY

Economic Considerations

(Continued from page 22)

for which the stock was secured but which may be suitable for making another product, in which case the remaining parts or fragments are waste."

I have mentioned several concepts of waste. Others are possible, but they probably fall between the extremes given above. Certain concepts are useful for certain purposes. The last-mentioned concept is certainly the most useful in focusing attention on the supply of potentially usable wood material that undiscovered utilization techniques may possibly convert into useful products. It is approximately the concept on which most of the statistics presented in this paper are based.

The economist in waste utilization research frequently makes surveys to determine the quantity of waste material produced during a given period at a plant or in a specified locality. Such a survey was made on a nationwide basis in 1945 by the U. S. Forest Service, and the results published in Reappraisal Report 4, "Wood Waste in the United States." In this report, waste included the sound portions cut but not utilized from trees five inches and larger in diameter at breast height. The upper stems of conifers were included to a four-inch top, and the limbs of hardwoods to the same minimum diameter. Furthermore, this volume included the sound portions of trees left uncut but badly damaged in logging operations and subsequent slash disposal. It included manufacturing waste, such as the sound volume of slabs, edgings, trimmings, cutting, shavings, sawdust, etc. The total volume of waste by these definitions was 6.5 billion cubic feet, of which 2.5 billion cubic feet was used as fuel. The four billion cubic-foot remainder, which is immediately available for some use, does not include the volume made into such by-products as lath, shingles, and dimension stock.

Only a small part of the four billion cubic feet of material not at present utilized can be processed into lumber economically. Furthermore, only a small part of it can presently be processed economically into low-quality items. The cost of processing it for fuelwood and transporting it to prospective consumers would be greater than the selling price which could be charged in competition with coal, oil, and other fuels. The fact that the quantity of waste by this definition is as great as it is, should not discredit any industry or group. It is a reservoir of raw material to challenge the ingenuity of utilization research personnel.

This reservoir of raw material should be studied, with regard to its distribution and its suitability for various uses. The results of this analysis should be helpful in showing what kinds of utilization research are needed to discover processes and equipment that can make possible the maximum use of wood now wasted. Such an analysis, on a national scale, should focus attention on our national woodwaste research problem and illustrate the type of analysis that can be made in the area tributary to any plant.

Figure 1 shows the four billion cubic feet of potentially useful material classified as logging waste and primary manufacturing waste. Nearly three-quarters of the total volume of waste is left in the woods in unutilized parts of cut trees and in trees damaged by logging and slash disposal operations. Figure 3 shows the logging and manufacturing waste distributed by the geographic regions outlined in Figure 2. The quantity of waste is greatest in the Pacific Northwest and Southwest Regions. In the former, logging waste makes up a very large proportion of the total; in the latter, logging waste is still somewhat more than half of the total. Figure 4 shows the relative volume of the primary manufacturing waste that is in the form of slabs, edgings, trimmings and other coarse material and that in the form of sawdust, shavings and other fine material. The aggregate quantity of primary manufacturing waste is greatest in the Southeast Region.

Careful examination of Figures 1 through 4, plus some knowledge of utilization practices and conditions common in various parts of the country, permits five broad deductions:

1. Logging waste is the largest category, permits five broad deductions: Because it is also the most widely scattered, it is usually the least available economically. The principal exception to this generalization is in the Douglas-fir region of western Washington and Oregon. The concentration and transportation of this class of material normally requires relatively large expenditures of manpower. With current, high wage rates, the cost of delivery at the consuming center is likely to preclude economic utilization of much of it, until mechanization of woods work has proceeded much farther than it has at present. Accordingly, except where volumes of logging waste per acre are high or where mechanized concentration and transportation are now feasible, more intensive utilization of woods waste will very likely have to await higher wood prices or further economies in production.

2. Primary manufacturing waste in relatively large quantities is available in the Southeast, South Atlantic, West Gulf, and Pacific Northwest Regions. In these regions, as elsewhere, this waste is partially concentrated at sawmills and other manufacturing plants. It is therefore theoretically more available than most logging waste. Actually much of it in the South Atlantic, Southeast, West Gulf and other eastern regions is in the form of slabs and sawdust at innumerable, scattered, temporary settings of small, portable sawmills. For most uses this material is not now practicably available, but must

(Continued on page 26)

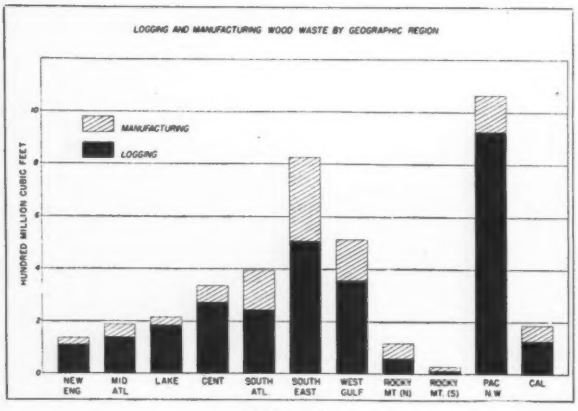

Figure 3.

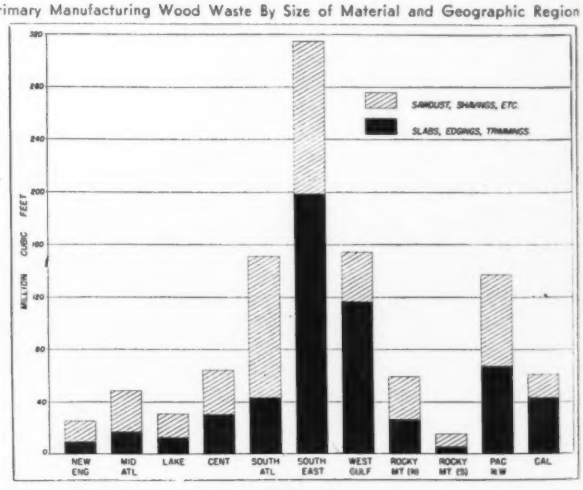

Figure 4.

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Economic Considerations

(Continued from page 24)

await the development of mechanized processes for picking up, transporting, and unloading it, or the development of a product that can be made from it with a value sufficient to pay the present cost of collection and transportation to the consuming plant. Where large, relatively permanent sawmills or other primary manufacturing plants are common, as in nearly all parts of the West and at some locations in the Lake States and West Gulf Regions, a supply of waste sufficient to attract potential users is available at or near given utilization points.

3. Wood now used as fuel can be diverted into other uses in which its value exceeds the fairly low fuel value. In most regions more by-product material of primary manufacturing plants is burned as fuel than is left unutilized. This diversion of wood from use as fuel is often feasible where power is relatively cheap, as in the case of electric power in parts of the West and South and natural gas in parts of the South. This use transfer could make available for higher use a large additional wood volume, which in some instances is relatively concentrated.

4. For the country as a whole, the volume of slabs, edgings, and other coarse waste material is greater than the volume of sawdust, shavings and other fine material. In the Pacific Northwest Region a considerably larger volume of sawdust and shavings is used for fuel than is the case with slabs and edgings. In this region, therefore, the present and potential volume of fine waste material is larger than the corresponding volume of coarse material.

5. Lumber production statistics for the Pacific Northwest Region indicate that, for 1945, about 68 percent was Douglas-fir, 17 percent ponderosa pine, 7 percent western hemlock, and the remaining 8 percent western red cedar, Sitka spruce, white fir and miscellaneous species. For practical purposes, this means that both the logging and milling waste for all products is distributed among the species in about the same proportions, although inclusion of pulpwood would certainly increase the proportion of hemlock somewhat. In this region, therefore, research on Douglas-fir logging and milling waste seems to offer the maximum opportunity waste reduction. Considering lumber production of the total west, ponderosa pine accounts for 25 percent of all production. Since western mills are normally large enough to supply considerable quantities of concentrated waste, research on ponderosa pine mill waste seems to be justified. In Texas and Louisiana, where larger mills still operate, lumber production is approximately 60 percent southern pine, 15 percent gum (red and tupelo), 15 percent oak, and the remainder miscellaneous species. Here research on pine mill waste seems to be in order, with gum and oak following in rank of importance.

Research problems of workers employed by wood-using companies depending on local raw materials will, of course, be dictated by local considerations. Peculiarities of the product manufactured, plus favorable conditions for concentrating nearby wood waste, may indicate the desirability of almost any kind of utilization research. In setting up research programs in the broad field of waste utilization for public and quasi-public agencies, however, consideration should certainly be given to those wastes that are in ample supply, sufficiently concentrated for practical exploitation, and produced by mills that are not likely to exhaust their supplies of operable timber in the immediate future.

Another important economic consideration in selecting a research project in wood-waste utilization is the determination of the kinds and quantities of wood waste available in an operating territory that can be supplied to a given plant at a feasible cost. In some instances, the choice between two otherwise equally meritorious research projects may hinge upon the economic availability of a given kind of waste material. A producer of corrugating board recently wanted to run some tests to determine if hardwood sawmill slabs would produce a satisfactory fiber for his use. He procured an experimental supply from a nearby sawmill. At this point he called in for counsel a man who knew something of the local sawmill industry. This local man recognized at a glance that the species represented in the experimental slabpile were bottomland species and not at all representative of the supply available generally in the territory of the corrugating board mill. Tests run on the experimental slabs, therefore, would not indicate the suitability of the average run of local sawmill slabs for the indicated purpose. The mill operator was advised to make a survey of the quantities and kinds of wood waste tributary to his plant and the probable purchase price and transportation cost of each, and to test those kinds that seemed to offer possibility for economic use.

Some of the failure to utilize waste is due to lack of technical processes for making a useful product from material now wasted. To a much larger degree, failure is due to the lack of cheap, efficient procedures for handling and concentrating widely scattered pieces of waste. Economists are sometimes called upon to assist equipment designers in planning and carrying out time studies to develop machines and procedures for handling and concentrating waste wood. One operator has found that slabwood from small sawmills can be loaded economically on wood dollies approximately the size of a 1½-ton truck bed. These dollies are spotted at several mills in a given locality and are filled with slabs by the off-bearer at about the cost of piling the slabs on the usual waste heap. Once a day the purchaser's truck driver loads a full "dolly" on his truck by means of a winch, cable, and a pair of skids. At the same time he leaves an empty "dolly." By a very simple "trial and error" study, this purchaser discovered the combination of equipment and process that provided him with a usable raw material at an acceptable cost.

Throughout this paper, I have talked about economic considerations in wood-waste utilization research. By this I do not mean to imply that research organizations need be "padded" with "stand-by" economists waiting to give counsel when called upon. A generous amount of clear economic thinking by the chemist, engineer, or other specialist is, however, necessary at the time waste-utilization studies are being planned and carried out. Such thinking should almost always include a consideration of the approximate quantity, character and distribution of the waste that is suitable for the manufacture of given products, the probable cost of the waste at the plant, and the probable selling price of the products. Consideration of these items may eliminate certain studies and permit the concentration of effort on those likely to develop processes that can be useful in plant operation and in wood-waste utilization.

NEW MARGARINE PACK

MW Pliofilm, product of The Goodyear Tire & Rubber Company is paper's latest competitor in the margarine packaging field. The material, shown by Barbara Taylor of Goodyear, makes use of a "squeeze-bag" development, by which housewives can color margarine by simply breaking a coloring capsule within the package.

Waste Paper Dealers Burning Collections

Rumor reaches PAPER TRADE JOURNAL that due to a series of disputes, the first truckloads of waste paper were delivered on July 9 to the city incinerator in Detroit. Meyer Garber, president of the Detroit Waste Material Dealers Ass'n., asserted that the 44 members of the association have nearly 200,000 tons of waste paper to burn.

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VERTICAL AERIAL PHOTOGRAPH showing heavy timber, lakes and general character of the forest in the Eastern Corp.-Dead River agreement. The dark areas are softwood timber; the light areas, hardwood timber.

Championing Scientific Timber Conservation

BANGOR, Me.—One of New England's largest timber owners, the Dead River Co., has granted exclusive timber-cutting rights on 100,000 acres of its property to the Eastern Corp., manufacturer of fine business papers. The agreement restricts cutting to carefully defined areas in accordance with the best sustained-yield practices.

The Dead River Co. will receive from the Eastern Corp. a yearly license fee apart from payment for timber cut, which it agrees to reinvest in the project — partially in the construction of a 30-mile year-round trunk road system and partially in forest management studies under the direction of Dwight B. Demeritt, its woodlands manager, and recent head of the University of Maine forestry department.

Areas involved are in Penobscot County, Me., within trucking distance of Eastern's Lincoln mill and within 70 miles of its South Brewer plant. This backlog of standing timber will assure William E. Eggleston, eastern's woodlands manager, a permanent supply of large cordages of pulpwood. The agreement terminates at the end of ten years, but provision has been made for renewal periods of ten years each.

Cutting areas will be allocated five years in advance and cuttings thereon will be limited to three-fourths of the annual growth of the whole property during that period.

This is the first large-scale commercial arrangement since early lumber days to restrict the cutting of spruce, hemlock and pine pulpwood to trees larger than ten inches in diameter, reserving the smaller trees for future operations.

During the early years of the agreement, forestry work will be concentrated on growth studies and will include the setting of permanent sample plots which will be studied at regular intervals. Of equal importance will be development of the best possible fire-protection system.

This agreement increases Eastern's holdings to a point where it owns or leases 386,000 acres of scientifically-managed timberlands in Maine and Nova Scotia and has cutting privileges or rights on 115,000 acres, or a total supply of 501,000 acres.

The arrangement between the corporations is the first of its kind in the Northeast.

Pulpwood and Veneer Plant For Greenville County, S. C.

GREENVILLE, S. C. — Announcement is made by Fred Langford that a manufacturing and shipping plant for pulpwood and veneer is being planned for construction in Greenville County "provided a suitable location can be found."

Warren's Lipsett Named DMMA Contest Judge

NEW YORK—Elmer Lipsett of the S. D. Warren Co., sales promotion department, Boston, has been named a judge of the Best of Industry contest sponsored by the Direct Mail Advertising Ass'n. Contest winners will be named at the DMMA Annual Convention, Philadelphia, September 29-October 1, at which time their entries will be displayed.

St. Regis' Hart To New York

NEW YORK—H. V. Hart, formerly operating from Deferiet, N. Y., as woodlands manager of the St. Regis Paper Co., properties in Canada, New-York and New Hampshire, has been appointed general manager of pulpwood operations of the printing publication and converting paper division, with headquarters at 230 Park avenue.

Macdonald Heads B.M.&T. Portland Division

PORTLAND, Ore. — Appointment of Palmer C. Macdonald as vice-president and manager of the Portland division of Blake, Moffitt & Towne is announced by O. W. Mielke, general manager. Mr. Macdonald succeeds Clinton L. Shorno who is retiring after many years of active service.

Pollard and Desjardin In Safety Posts

Merrill C. M. Pollard of the National Gypsum Company, Buffalo, has been re-elected to the board of directors of the Western New York Safety Conference, Inc., and Wilfred J. Desjardin of the Kimberly-Clark Corp., has been elected first vice-president.

Western SAPIs Golfing At Medinah, July 16

CHICAGO—Second golf tournament of the Salesmen's Ass'n., of the Paper Industry (Western Division) is scheduled for July 16 at Medinah Country Club. Louis O. Bilz of the Chemical Paper Mfg. Co., and Crocker McElwain Co., is in charge of reservations.

K-C's Wells Speaks At Park Dedication

NIAGARA, Wis. — Rex Wells, manager of the Kimberly-Clark Corp. mill here, was one of two speakers at the dedication of Memorial Park on July 5. The dedication was part of the program during the two-day celebration July 4-5.

Daymon Paper Products Co., New Haven, Conn., Incorporate

NEW HAVEN, Conn.—Daymon Paper Products Co., 105 East street, has been incorporated with Wilson Daymon as president-treasurer, and Clare Marsh Daymon, secretary. These two and Inez E. Daymon are directors.

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TRENDS

Office of the PAPER TRADE JOURNAL
Wednesday, July 14, 1948

Some individuals within the industry are unduly alarmed at the slackening in paper demand, the U. S. Dept. of Commerce finds, whereas the present changes can best be described as a breathing spell that can be highly advantageous in allowing a readjustment to more normal prewar conditions.

For the first time since the war, increasing costs are being thoroughly studied and dollar investment in inventory receiving great attention. And since dollar investment in stocks at present prices is not commensurate with the capitalization of many companies—especially the average paper merchant or the small paper converter—the prewar ratio of stocks to sales cannot be afforded. A further squeeze is given these firms because of the tendency of most manufacturers to reduce their discount periods to ten and 20 days. In fact the dollar squeeze on available capital is reported all the way through the paper distribution field to commercial printers. It thus appears that various consumers and distributors of paper are not alone holding down on their inventory position but also are attempting to weed out the poor quality and off-grade stock which they were more or less forced to take in the previous two years.

These conditions have reflected to the manufacturing mills, the Department states, with the result that order backlogs on many grades have been filled, numerous paper mills find it possible to make prompt shipments, and some have gone off their allotment system entirely. A number of mills are now finding it necessary to sell their products rather than refuse business, as was the custom not many months ago. (This does not apply to all mills nor to all grades, since shortages of kraft paper and bags, toilet tissues and market newsprint are fairly general. Other special grades are hard to get according to location, distances from mills, etc.)

The moderate easing in the supply-demand picture for paper and board during March and through early June, for most grades and converted items, may in part be the general leveling in the nation's industrial and economic activity in the first quarter, the Department believes. Domestic production of practically all grades of paper and board so far this year have been at peak seasonal levels so that, to a substantial degree, the past few months served as a "catching-up period."

Reporting on the nation's economy as a whole, it is evident that a buyer's market has become an actuality in more lines than in paper and board, and that the demand is for quality products. This trend is viewed by old-line paper men as the normal healthy course of the industry, who view the present-day lull without alarm. The sharp upward trend in paper consumption has probably leveled off with supplies of most grades in approximate balance to requirements, and with pipe lines replenished.

"Additional increases in paper demand must hinge upon further advances in the physical output and distribution of goods," the Dept. of Commerce states, "particularly non-durables where paper and board are such an important integral part in wrapping and packaging in manufacture, wholesale distribution and retail sales. From the standpoint of paper manufacturers and distributors, it also is important to note that the durable goods sector of retail sales is still below its prewar share of the aggregate retail sales dollar, despite the market expansion in durable goods sales since the end of the war. Whereas building materials, hardware, furniture and house furnishings, home appliances and radios are above the prewar level in the durable group, sales of motor vehicle dealers are still relatively low and have held the durable goods sector down. This has resulted in the slightly higher position of non-durable goods retail stores sales. Thus as time goes on, it might be expected that of the total consumer expendable income a slightly greater proportion will be spent for durable goods and slightly less for non-durables."

From other sources, it is learned that purchasing power already has swung to durables, although high prices are restricting the demand. As this condition develops, the Department believes, it will mean slightly less paper in those grades and items which go into the packaging and distribution of certain non-durable goods relative to the total level of economic activity. Unit sales of men's and women's apparel and jewelry are reported much behind the last two years, even while style changes have added considerable stimulant. Productivity and business activity are, however, expected to increase for the last half of 1948, protected by the European Aid and preparedness programs and supported by a better flow of materials. Even though the total aggregate industrial and business activity of the nation advances to higher levels, perhaps a slightly smaller percentage of paper will be consumed relative to every billion dollars of goods and services than during 1946 and 1947, the Department expects.

Pulpwood

The Canadian Forestry Association announced that forest fires in Canada this year have burned 800,000 acres with loss estimated at $43,000,000, "Canadian pulpwood which in 1947 represented 26 percent of total receipts of Late State mills and 28 percent of mill receipts in the Northeast region is in generally favorable supply. Trade reports state that the cut for Canadian mills east of the Rockies during the present year is expected to reach 10 million cords. The Dominion Timber Control has assigned a supplementary quota of more than 850,000 cords for export to the U. S. during 1948. This will provide a total 1948 export allocation of some 2,160,000 cords, or about 300,000 cords in excess of the 1947 allocation. The increase is attributable primarily to an accumulation of market wood largely in Quebec and New Brunswick" according to the U. S. Dept. of Commerce.

American Pulpwood Association efforts are being directed to improve three basic conditions confronting paper and board manufacturers in obtaining pulpwood. First is a closer liaison with equipment makers so that large scale production of fairly priced mechanical equipment may be available to large and small contractors. Second is the training of labor so as to obtain more uniformly proficient operators to serve the machines. Third is the promotion of sound policies of conservation for the attainment of better cutting practices in the forests. Finally, the collection and dissemination of information on economic and legislative topics of common interest to its members. "So dependent is the pulp and paper industry upon a steady and economic flow of pulpwood to the mills that the advantages of supporting an organized endeavor to eliminate production bottlenecks and provide more effective methods of procurement and forest conservation must be readily recognized," says the Department in emphasizing the desirability of full-scale industry cooperation.

Indexes

Index of general business activity for the week ended July 3 fell to 141.8 from 149.7 in the preceding week, compared with 134.2 for the corresponding week of 1947.

Index of paperboard production fell to 168.9 from 184.6 in the preceding week, compared with 168.8 for the corresponding week of 1947.

Comparative index for paper and paper board production as reported by AP&PA are shown below:

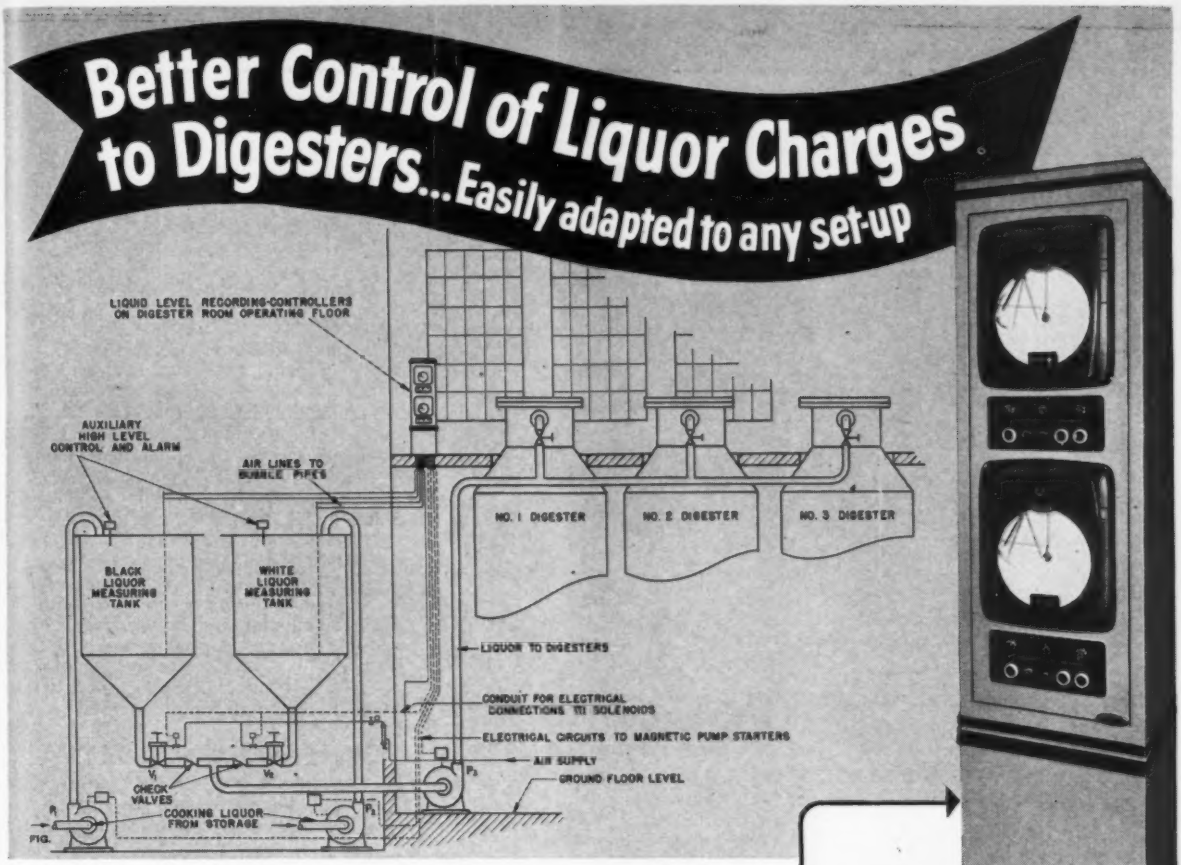
	July 3 1948	June 26 1948	July 5 1947	July 6 1946	July 7 1945
Paper*	91.1	99.8	62.7	61.1	47.9
Paperboard	89.0	97.0	78.0	70.0	62.0

*Tonnage production was 64.6 percent greater than last year's largely because the Fourth of July holiday came in the corresponding week last year, while this year it comes in the week ending July 10, the following week.

Paperboard Production Statistics

	For Weeks Ended July 3 1948	June 26 1948	July 5 1947	June Month of	
Production	171,583	187,408	137,207	903,154	tons
New Orders	215,857	160,314	187,739	942,998	tons
Unfilled Orders	381,065	336,183	517,713	381,065	tons
Percent of Activity—Current 89%					
Percent of Activity—Month of June 94%					
Percent of Activity—Year to Date 100%					

Better Control of Liquor Charges to Digesters... Easily adapted to any set-up



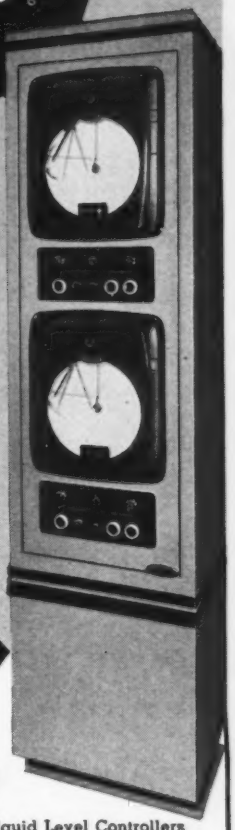
The FOXBORO Automatic Digester Liquor Measuring System

Accurate, uniform charges of liquor to digesters can be depended upon, day in and day out, year after year, when this modern packaged control system is installed. The chart gives a permanent record of the amount of liquor used; improvements in product quality and uniformity show up almost immediately.

This control system is equally adaptable to set-ups having measuring tanks on the digester operating floor, on the ground floor, outside the digester building, or any other mill layout.

Your operators, too, will appreciate how easy it is to run this system. Merely setting a control index and pushing a button is all that's needed in normal operation. The Foxboro Automatic Digester Liquor Measuring System does all the rest — charges the digester and refills the measuring tanks.

By combining the simplicity of the widely used air bubble principle of liquid level measurement with the efficiency of Foxboro's Rotax Electrical Controller, you are assured of continuous trouble-free operation. Foxboro liquor measuring systems have been in continuous operation without maintenance for as long as 9 years.



Cabinet Equipment

- 2 Rotax Liquid Level Controllers for White and Black Liquor
- Simple, Push-Button Stations
- Red and Green Signal Lights
- Manual Valve and Pump Control for Emergency Use

Foxboro Automatic Digester Liquor Measuring Systems come completely assembled in attractive, rugged, dust-proof steel cabinets. Piping and wiring is pre-engineered at the factory Only the simplest of connections are needed to start operation.

Are **you** profiting by these advantages? Write for complete details. **The Foxboro Company, 114 Neponset Avenue, Foxboro, Mass., U.S.A.**

FOXBORO Reg. U.S. Pat. Off. **AUTOMATIC DIGESTER CONTROL**

IMPORTS

Week Ending July 10

NEW YORK

Newsprint

R. A. Olsen, Newscarrier, Donnacona, 399 rolls.
Malmar Paper Co., Louis McHenry Howe, Genoa, 167 rolls.
H. G. Craig, Donpaco, Donnacona, 369 rolls.
R. A. Olsen, A.C.D., Donnacona, 382 rolls.
Daily Mirror, Ethel Tombs, Gatineau, 306 rolls.
Montmorency Paper Co., Brigus, Botwood, 3,105 rolls.
E. de Vries Co., Veendam, Rotterdam, 130 rolls.
R. A. Olsen, Kermic, Donnacona, 377 rolls.

Wallpaper

Meadows Wye & Co., American Veteran, Manchester, 1 cs.
Hudson Shipping Co., American Lawyer, Havre, 32 pkgs.

Gummed Paper

B. F. Drakenfeld & Co., American Veteran, Liverpool, 29 cs.
B. F. Drakenfeld & Co., Media, Liverpool, 39 cs.

Printing Paper

Olympic Shipping Co., American Lawyer, Havre, 38 cs.

Wrapping Paper

Corn Exchange Bank Trust Co., Stockholm, Gothenburg, 141 bls.

Tissue Paper

B. F. Drakenfeld & Co., Media, Liverpool, 15 cs.

Photo Paper

J. J. Gavin Co., Mauretania, Southampton, 5 cs. (unsensitized).

Rags, Baggings, Etc.

A. de Vries Trading Corp., American Lawyer, Havre, 66 bls. rags.
(———), Excelsior, Cochin, 100 bls. old jute rags.
American Express Co., Media, Liverpool, 7 bls. new wool rags.
J. Eisenberg & Son, Agwidale, Havana, 56 bls. cotton rags.
Atlas Waste Manufacturing Co., Agwidale, Havana, 10 bls. cotton waste.
(———), Netherlands Victory, Venice, 72 bls. rags.
Chemical Bank Trust Co., Netherlands Victory, Venice, 178 bls. waste bagging, 61 bls. rags.
Textile & Paper Supply Co., Louis McHenry Howe, Bombay, 50 bls. old jute rags.
E. J. Keller Co. Inc., Louis McHenry Howe, Bombay, 300 bls. old jute rags.
New England Waste Co., Louis McHenry Howe, Bombay, 300 bls. cotton waste.
(———), Louis McHenry Howe, Genoa, 178 bls. jute rags.
C. Comiter, Louis McHenry Howe, Genoa, 70 bls. cotton waste.
Chemical Bank Trust Co., American Miller, Antwerp, 130 bls. jute waste.
Midwest Waste Material Co., Emilie Maersk, Antwerp, 149 tons jute bands (paperstock).
A. de Vries Trading Corp., Creiggton Victory, Antwerp, 70 bls. scrap bagging.
Royal Manufacturing Co., Topa Topa, Antwerp, 51 bls. cotton waste.
National City Bank, Hav, Alexandria, 103 bls. Hessian bagging.
Chemical Bank Trust Co., Hav, Alexandria, 72 bls. scrap bagging.
National City Bank, Hav, Alexandria, 48 bls. old burlap bagging, 63 bls. old white cotton rags, 98 bls. burlap bagging, 202 bls. old light Hessian bagging.
J. H. Schroeder Banking Corp., Bastogne, Antwerp, 123 bls. cotton waste.
J. J. Rozendaal, Bastogne, Antwerp, 107 bls. cotton waste.
E. J. Keller Co. Inc., Mohamed Ali el Kebir, Alexandria, 144 bls. old cotton rags.
National City Bank, Mohamed Ali el Kebir, Alexandria, 146 bls. scrap bagging.
National City Bank, Mohamed Ali el Kebir, Alexandria, 52 bls. heavy jute bagging, 35 bls. old light Hessian bagging.

Old Rope

Irving Trust Co., Mohamed Ali el Kebir, Alexandria, 49 bls. jute ropes.

Casein

Hercules Powder Co., Campero, Buenos Aires, 2,000 bags (lactic), 1,000 bags casein.
F. H. Paul & Stein Bros., Campero, Buenos Aires, 100 bags (lactic).

China Clay

English China Clay Sales Corp., Boston City, Bristol, 568 bags.

Gluestock, Etc.

H. Remis, Santa Monica, Barranquilla, 227 rolls gluestock.
H. Remis, Santa Maris, Callao, 56 bls. gluestock.
Trans-Atlantic Animal By-Products Corp., Mormacpine, Rio Grance, 300 bags bone glue.

Woodpulp

Cellulose Sales Co., Stockholm, Gothenburg, 480 bls. dry sulphite pulp.

BOSTON IMPORTS

National City Bank, Union Victory, Rotterdam, 29 rolls newsprint.
J. H. Schroeder Banking Corp., Campero, Buenos Aires, 250 bags lactic casein.

NORFOLK IMPORTS

F. P. Gaskell Co., American Veteran, Glasgow, 64 cs. coated paper.
Ayres W. C. Jones Co., American Veteran, Manchester, 9 bls. cotton waste.

LOS ANGELES IMPORTS

H. Adlerstein, Louis McHenry Howe, Genoa, 147 bls. old jute rags.
Bank of The Manhattan Co., Louis McHenry Howe, Genoa, 101 bls. cotton tares.

Turkey Potential Market For U. S. Made Papers

WASHINGTON — Sales of United States paper in Turkey could be materially increased if firms in this country could supply the grades required by the Turkish market at prices competitive with those quoted by Swedish or other European firms, according to consular sources at Istanbul.

There is substantial Turkish demand for practically all types of imported paper, it is pointed out, but importers there state that United States prices are high compared with those of European countries. Normal commercial needs are necessarily met by imports, it is added, since the Turkish government uses the bulk of domestically-produced paper and paperboard. The government also controls imports, and the foreign exchange.

Norway To Expand Chemical Output

WASHINGTON—Expansion of chemicals output by Scandinavian paper producers is indicated in reports of individual companies received here.

A leading Norwegian paper manufacturer, Aktieselskapet Borregaard, Sarpsborg, Norway, is reported to contemplate chemicals production. The company has completed a factory for manufacture of chlorine and alkalies by electrolytic process, and has other plants for making acetic acid, butyl alcohol and acetates.

A Norwegian committee is understood also to be studying the possibility of producing synthetic phenol on a scale competitive with imported products.

Canada Improves Dollar Position

Many informed commentators note that Canada has improved her situation, so far as dollar shortage is concerned, the Chamber of Commerce of the U. S. said on July 9. Recent official figures showed the Dominion's reserves of gold and U. S. dollars at $742,000,000, against $461,000,000 last December. The current total includes $140,000,000 drawn down under the $300,000,000 Export-Import Bank Credit, the Chamber added.

Offshore purchases for European aid should further stimulate the Dominion's situational improvement and her bettered U. S. dollar exchange position may cause modification of the existing import bans on American goods.

Export Restriction Eased

WASHINGTON — Related groups of commodities on the "non-positive" list of the Office of International Trade may hereafter be exported to a single consignee on a single export license application, under revised procedure announced on July 8. Among commodities eligible for this procedure is woodpulp, except rayon and special chemical grades; naval stores, and various timber and wood products.

Greece's Naval Stores Output Dips

WASHINGTON — Production of Greece's naval stores in the 1948-49 crop year will be less than the 22 million pound output of 1947-48, according to latest information received here. Domestic consumption will not exceed that of 1947-48 when 350 tons of rosin and 690 tons of turpentine were used.

Newsprint Sets June Record

North American production of newsprint in June 1948 exceeded that of any June on record. Production in the U. S. was 72,075 tons, in Newfoundland 32,114 tons, and in Canada 382,937 tons, making total North American production of 487,126 tons, compared with 453,031 tons in June, 1947.

Canadian mills in the first six months of 1948 produced 67,592 tons more than in the same months of 1947, an increase of 3.1 percent. U. S. output was 9,942 tons or 2.4 percent below 1947's period. Newfoundland production was 3,228 tons or 1.8 percent less. Total continental increase was 54,422 tons, or 2.0 percent more than in the first six months of 1947, also greater than in any preceding similar period.

Good Going

It heartens us to swap a friendly "Cheerio" with the sprites of the Founders—John Moore and J. Atwood White—as they flit by on Cloud 16. Their enthusiastic endorsement of what we've been up to in the past couple years is definitely flattering.

Their original establishment—which came into being to execute an order for four slitters—bore little resemblance to the present Moore & White plant. Just as great is the contrast of conditions in the paper-making industry today with the cloistered calm of 1885, when they set up shop.

Things now are—if we may coin an elegant phrase—on a root-hog-or-die basis. Even with paper-supply lagging behind demand, competitive pressures are fierce and mounting. Down-time is a luxury that few makers of paper or paperboard can afford in quantity.

Today, Moore & White—with plant-capacity doubled, and with an array of technical and production personnel unmatched in its history—offers prompt and effective service in the repair and rebuilding of obsolescent machines which are not earning their salt.

We'll be glad to supply you with complete new assemblies, of course. But if your present needs call rather for component machines or replacement parts—the rejuvenation and speeding-up of ageing equipment—a Moore & White sales-engineer is ready to dig into your problem today. Call upon us.

The MOORE & WHITE Company

15TH STREET AND LEHIGH AVENUE • PHILADELPHIA 32, PA.

Custom-built machines for makers of paper and paperboard

PRICES

Quotations indicate trends in an open market. At the moment they can be of little more velue. While some volume business still is done under contract at the figures shown, fluctuations are too varied and frequent to permit prices to be interpreted as representing a wholly stabilized market.

NEW YORK

Paper

(Delivered New York)

Standard News, per ton—	
Rolls, contract	$93.00/$96.00
Sheets	108.00/109.00
Kraft—per cwt.—Carload Quantities Zone A Deld. 40 lb. base wgt.	
Superstandard Wrapping	$9.00/ —
No. 1 Wrapping	7.25/ 8.00
Standard Wrapping	6.50/ —
Standard Bag	6.50/ —
Tissues—Per Ream 24x36 (480) 11 lbs. Zone 1.	
Wh. No. 1 Frd.	$1.84/$2.00
Wh. No. 1 M. G.	1.94/ 2.00
Wh. No. 1½	1.60/ —
Wh. No. 2	1.75/ —
Kraft Anti-Tar	1.65/ —
Kraft Unbl.	1.85/ —
Manila No. 2	1.62/ —
Shred. Wh. No. 1 cwt.	1.10/ 1.50
Toilet—Per Case of 100 rolls—1 M Sheets.	
Unbleached	$8.50/$10.00
Bleached	8.50/ 10.00
Paper Towels—Per Case of 3750—Zone 1.	
Wh. Jr. M'tif'd 9¼x9½	$5.15
Br. Sr. M'tif'd 10x12	3.60
Br. Jr. M'tif'd 9½x9¾	3.10
Br. Jr. Sgl. fold 10x10¾	3.15
Manila—per cwt.—C-1 f.a.	
No. 1 Jute Tag	$14.50/ —
Reg. Jute Manila	13.25/$15.50
No. 1 Manila	9.75/ —
5 lb. Manila	10.75/ 11.25
Boards, per ton—	
Plain News	$92.50/ —
Filled News	94.00/ —
Plain Chip	90.00/ —
Sgl. Mla. L-d. Chip*	100.00/102.50
White Pat. coated*	120.00/ —
Kraft Liners 42 lb.	100.00/ —
Kraft Corr. .009	105.00/ —
Binders Boards	126.00/ —

* Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following prices are representative of distributors' resale prices, all deliveries in Zone 1:

Rag Content Bonds and Ledgers—
White, 16 lb.

Bonds, per cwt.	Carton	4 C't'n	Ton
100% Rag Ext. No. 1	$55.00	$50.80	$48.70
100% Rag	48.25	44.55	42.70
75% Rag	37.50	34.55	33.10
50% Rag	32.25	29.40	28.25
25% Rag	28.75	26.15	25.10
Ledgers, per cwt.			
100% Rag Ext. No. 1	$55.00	$50.80	$48.70
100% Rag	48.25	44.55	42.70
75% Rag	37.50	34.55	33.10
50% Rag	32.25	29.40	28.25
25% Rag	28.75	26.15	25.10

Sulphite Bonds and Ledgers—
White, 16 lbs.

Bonds, per cwt.			
No. 1	$21.25	$19.25	$18.50
No. 2	20.25	18.30	17.55
No. 4	19.25	17.55	16.85
Ledgers, per cwt.			
No. 1	$21.75	$19.65	$18.85
No. 2	20.75	18.75	18.05
No. 4	20.00	18.10	17.35

Free Sheet Book Papers—
White, Cased Paper

	(Per cwt.) Case	Ton
No. 1 Glossy Coated	$20.40	$19.50
No. 2 Glossy Coated	19.15	18.30
No. 3 Glossy Coated	18.40	17.60
No. 1 Antique (Watermarked)	15.90	15.15
No. 2 Offset	15.15 to 17.90	14.60 to 17.10
A Grade E. F.	14.90	14.25
A Grade S. & S. C.	15.40	14.65
B Grade E. F.	13.90	13.30
B Grade S. C.	14.40	13.70

Wood Pulp

Domestic mill contract prices delivered with varying freight allowances.

	Per Short ADT
Groundwood	$80.00/$81.00
Unbleached Sulphite	124.00/ —
Bleached Sulphite	125.00/135.00
Bleached Soda	130.00/ —
Bleached Sulphate	175.00/185.00
Unbleached Sulphate Northern	125.00/155.00
Unbleached Sulphate Southern	130.00/145.00

Canadian Quotations

Prices delivered with varying freight allowances unless otherwise specified:

	Per Short ADT
Bleached Sulphate	160.00/185.00
Unbleached Sulphate	125.00/150.00
Unbleached Sulphite	125.00/126.00
Bleached Sulphite	125.00/135.00
Glassine Unbleached Sulphite (no freight allowance)	120.00/ —
Bleached Soda	130.00/ —
Groundwood	80.00/ 85.00
Sideruns Pulping News	80.00/ 90.00
Hardwood and Specialty Grades	Nominal

Swedish Quotations

On dock, Atlantic Ports

Bleached Kraft	185.00/ —
Bleached Sulphite	185.00/ —
Unbleached Sulphite	155.00/157.50
Unbleached Kraft	147.50/ —

Finnish Quotations

On dock, Atlantic Ports

	Per Short ADT
Bleached Sulphite	$187.50/ —
Unbleached Sulphite	155.00/157.00
Unbleached Sulphate	147.50/ —

New Domestic Cotton Cuttings

(F.o.b. Ship. Pt. Plus Dealer's Commission)

White Shirt	$11.50/$12.00
Unbleached Muslin	12.00/ 12.50
Light Silesias	9.00/ 9.25
White Back Blue Overalls	9.00/ 9.50
Blue Overalls	8.00/ 8.25
Fancy Shirt	6.00/ 6.25
Light Percales	8.50/ 8.75
Light Prints	7.50/ 7.75
No. 1 Washables	5.00/ 5.25
Bleachable Khaki	7.50/ 8.00
Unbleachable Khaki	6.50/ 7.00
Cottonades	5.50/ 5.75

Old Domestic Cotton Rags

(F.o.b. Ship. Pt. Plus Dealer's Commission)

	Per 100 lbs.
No. 1 Whites Repacked	$5.50/ $6.00
No. 1 Whites Miscellaneous	4.50/ 5.00
No. 2 Whites Repacked	3.50/ 3.75
No. 2 Whites Miscellaneous	3.00/ 3.50
Blue Overalls	3.75/ 4.00
Thirds and Blues Repacked	3.25/ 3.50
No. 1 Roofing Rags	1.70/ 1.80
No. 2 Roofing Rags	1.60/ 1.70
No. 3 Jute Bagging	1.50/ 1.60
No. 4 Brussels and hard back carpets	1.50/ 1.60
No. 5A Roofing Rags	1.50/ 1.60

New Foreign Cotton Cuttings

(Prices to Mill, F.o.b. Dock, N. Y.)

	Per 100 lbs.
New Dark Cuttings	$5.50/ $5.75
New Mixed Cuttings	6.25/ 6.50
Light Silesias	9.25/ 9.50
Light Flannelettes	9.25/ 9.50
New White Cuttings	12.00/ 13.00
New Unbleached Cuttings	12.25/ 13.00
Fancy Shirt Cuttings	6.50/ 7.00
Light Prints	7.75/ 8.00
Bleachable Khaki, No. 1	7.00/ 7.50
Unbl. Khaki, No. 1	6.25/ 6.75

Old Foreign Rags

(Prices to Mill, F.o.b. Dock, N. Y.)

	Per 100 lbs.
No. 1 White Linens	nominal
No. 2 White Linens	nominal
No. 3 White Linens	nominal
No. 4 White Linens	nominal
No. 1 White Cottons	8.00/ 10.00
No. 2 White Cottons	7.00/ 8.00
No. 3 White Cottons	6.00/ 6.50
No. 4 White Cottons	4.00/ 4.50
Extra Light Prints	6.50/ 7.00
Old Light Prints	4.50/ 5.00
Med. Light Prints	4.00/ 4.50
Dutch Blue Cottons	5.25/ 5.50
Checks and Blues	4.00/ 4.25
Linsey Garments	2.35/ 2.50
Dark Cottons, European	2.30/ 2.35
Dark Cottons, Egyptian	3.25/ 3.50
Old Shopperies	2.20/ 2.30
New Shopperies	2.25/ 2.30

Bagging

(Prices to Mill, f.o.b. N. Y.)

	Per 100 lbs.
Foreign Gunny, No. 1	$6.75/ $7.25
Domestic Gunny, No. 1	6.75/ 7.25
Heavy Wool Tares	6.25/ 6.50
No. 1 Scrap Baggings	5.50/ 5.75
Roofing Bagging	1.50/ 1.75
Foreign Manila Rope	6.00/ 6.75
Domestic Manila Rope	6.50/ 6.75
Jute Strings	5.00/ 5.25
No. 1 Sisal Strings	5.25/ 5.50
Mixed Strings	1.75/ 2.50

Waste Paper

Base Prices to Mills for Average Packings
F.o.b. New York, Baled

	(Per Ton)
No. 1 Hd. Wh. Env. Cts, one cut	$155.00/$165.00
No. 1 Hard White Envelope Cuts	145.00/ 155.00
No. 1 Hd. Wh. Shavings, unruled	140.00/ 150.00
No. 1 Hd. Wh. Shavings ruled	110.00/ 130.00
Soft White Shavings, one cut	140.00/ 150.00
No. 1 Soft White Shavings	125.00/ 135.00
Soft White Shavings, Misc.	115.00/ 125.00
No. 1 Fly Leaf Shavings	45.00/ —
No. 1 Gd'wd Fly Leaf Shavings	35.00/ —
No. 1 Heavy Books & Magazines	23.00/ 24.00
Mixed Books	15.00/ 18.00
No. 1 White Ledger	75.00/ 80.00
Col. Ledger	50.00/ 55.00
Manila Tab. Cards	90.00/ 95.00
New Man. Env. Cuttings, one cut	100.00/ 110.00
New Manila Envelope Cuttings	65.00/ 75.00
Extra Manilas	25.00/ 30.00
Mxd Kraft, Env. & Rag Cuttings	75.00/ 85.00
Kraft Envelope Cuttings	100.00/ 110.00
Triple Sorted, No. 1 Brown Soft Kraft	65.00/ 75.00
New Kraft Corrugated Cuttings	70.00/ 75.00
No. 1 Assorted Old Kraft	50.00/ 55.00
New Jute Corrugated Cuttings	27.00/ —
Old 100% Kraft Corr. Containers	35.00/ 40.00
Old Corrugated	19.00/ 21.00
No. 1 News	11.00/ 12.00
No. 1 Mixed Papers	8.00/ 9.00
Box Board Cuttings	8.00/ 9.00
White Blank News	75.00/ 85.00
Overissue News	16.00/ 17.00
Mill Wrappers	20.00/ 22.00

Twines

All Prices Nominal, F.o.b. Mill

(Soft Fiber)	
Coarse Polished—India	.34½/ .35¾
Fine Polished Fine India	.41¼/ .45
Unpolished—Paper Makers	.31 / .33½
Tube Rope	.29¾/ .32¼
Wrapping	.32¾/ .36½
Cotton	.63¼/ .66¾
(Hard Fiber)	
Mex. Sisal	.21 / .27
Manila (Reprocessed)	.30 / .32
(American Hemp)	
Polished Hemp	.36¾/ .60
Unpolished	.32¼/ .54

PHILADELPHIA

Domestic Rags (New)

(F.o.b. Eastern Shipping Point)

Shirt Cuttings—	
New White No. 1	.10½/ .11
New White No. 2	nominal
Light Silesias	.07½/ .08
Black Silesias, soft	.06 / .06½
New Unbleached	.10½/ .11¼
Washable Prints	.06½/ .07
Washable No. 1	.05 / .05½
Blue Overall	.07½/ .08
Cottons—According to grade—	
Washable Shredding	.03 / .03½
Fancy Percales	.06¾/ .07¼
New Black Soft	nominal
Khaki Cuttings—	
Unbleachable Cotton Cuttings	.05¾/ .06½
Bleachable Cotton Cuttings	.06½/ .07
Men's Corduroy	.05½/ .06
Ladies' Corduroy	.05 / .05½
Cottonades	.05½/ .06

Domestic Rags (Old)

(F.o.b. Eastern Shipping Point)

White No. 1—Repacked	4.50 / 5.00
Mixed White	4.00 / 4.25
White No. 2—Repacked	3.50 / 3.75
Thirds and Blues—	
Miscellaneous	2.50 / 2.75
Repacked	3.00 / 3.25
Roofing Stock—	
Foreign No. 1	nominal
Domestic No. 1	1.65 / 1.70
Domestic No. 2	1.55 / 1.60
Roofing Bagging	1.45 / 1.50
Old Manila Rope	5.75 / 6.00

(Continued on page 36)

...For exceptional covering power, brilliance and strength ....you need Du Pont MOLYBDATE ORANGE

Here's an outstanding pigment for your next coloring job—whether fancy printed paper, coated paper or twisting paper. It's a versatile color which blends well with either yellow or red—to give truly distinctive tones.

Molybdate Orange YE-428-D is standardized for both beater and coated paper uses. It can be used in flinting and frictioning—wets readily with water—mixes well with casein and other sizes—won't bleed in water. And it's best for economy—compared to either organic orange pigments or regular chrome orange pigments.

Ask your Du Pont salesman for details, or write . . .
E. I. du Pont de Nemours & Co., (Inc.), Pigments Department, 1007 Market Street, Wilmington 98, Delaware.

DU PONT PIGMENTS FOR QUALITY PRODUCTION

DU PONT
REG. U.S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING ...THROUGH CHEMISTRY

Du Pont "CAVALCADE OF AMERICA" returns to the air Monday, September 13—NBC Network

PRICES CONTINUED FROM PAGE 34

Bagging
(F.o.b. Eastern Shipping Point)

Gunny No. 1—	
Foreign	nominal
Domestic	5.00 / 5.50
No. 1 Clean Bright—	
Sisal Strings	.04½/ .05
No. 2 Clean Bright—	
Sisal Strings	.03½/ .04
Sisal Jute	.02¾/ .03
Scrap—	
No. 1	5.00 / 5.50
No. 2	2.50 / 3.00

Old Papers
F.o.b. Phila. Mill Prices, Baled

No. 1 Hard White Envelope Cuts, one cut	$100.00/$115.00
No. 1 Hard White Shavings, unruled	100.00/ —
Soft White Shavings	80.00/ —
White Blank News	65.00/ 70.00
Soft White Shavings, One Cut	/ 80.00
No. 1 White Ledger	65.00/ 70.00
No. 1 Heavy Books & Magazines	20.00/ 22.00
Overissue Magazines	nominal
New Manila Envelope Cuttings	75.00/ —
No. 1 Assorted Old Kraft	35.00/ 40.00
No. 1 Mixed Paper	8.00/ 10.00
Box Board Cuttings	8.00/ 10.00
Kraft Corrugated Cuttings	75.00/ 80.00
Old Corrugated	20.00/ 24.00
Overissue News	13.00/ 15.00
No. 1 News	10.00/ 12.00

BOSTON

Old Papers
F.o.b. Phila. Mill Prices, Baled

No. 1 Hard White Shavings, unruled	$6.25 /$6.75
No. 1 Hard White Shavings, ruled	6.00 / 6.50
Soft White Shavings, Misc.	6.00 / 6.25
No. 1 Fly Leaf Shavings	— / —
No. 2 Fly Leaf Shavings	4.25 / —
No. 1 Grdwd. Fly Leaf Shvgs.	1.75 / 2.00
No. 2 Groundwood Fly Leaf Shavings	1.50 / 1.75
Mixed Colored Shavings	2.00 / 2.25
New Manila Env. Cuts, one cut	4.50/ 4.75
Hard White Envelope Cuts, one cut	7.00 / —
Triple S'ted No. 1 Br. Soft Kraft	3.75 / 4.00
Mixed Kraft Env. & Bag Cuttings	4.00 / 4.25
Kraft Envelope Cuttings	5.00 / 5.50
No. 1 Heavy Books & Magazines	1.75 / —
New Manila Env. Cutt'gs, one cut	—/ /
New Manila Envelope Cuttings	4.00 / 4.25
White Tabulating Cards	5.00 / —
Groundwood Tabulating Cards	1.50 / 1.75
White Blank News	2.25 / 2.50
No. 1 Assorted Old Kraft	3.50 / 4.00
No. 1 Mixed Paper	.47½/ —
Overissue News	.90 / 1.00
No. 1 News	.55 / .60
Box Board Cuttings	.60 / .70
New Corrugated Cuttings, Kraft.	2.75 / 3.00
Old Kraft Corrugated Containers	2.00 / 2.25
Old Corrugated Containers	— / 1.10
Jute Corrugated Cuttings	1.07½/ —
Paper Strings	2.00 / 2.25

Bagging
(F.o.b. Boston)

Gunny Bagging—	
Foreign	— / 4.75
Domestic	6.25 / 6.50
Sisal Rope No. 1	6.25 / —
Sisal Rope, No. 2	5.50 / —
Mixed Rope	3.00 / —
Mixed Strings	1.60 / —
Transmission Rope—	
Foreign	nominal
Domestic	3.00 / 3.50
Manila Rope—	
Foreign	nominal
Domestic	6.25 / 6.50
Jute Carpet Threads	6.00 / —
Bleachery Burlap	— / 7.00
Scrap Burlap—	
Foreign	6.00 / 6.25
Domestic	6.00 / 6.25
South America	6.00 / 6.25
Wool Tares	
Foreign	6.25 / —
Domestic	6.25 / —
Austr. Wool Pouches	7.50 / —
New Zealand Wool Pouches	7.50 / —
New Burlap Cuttings	6.50 / —
Heavy Baling Bagging	5.25 / 5.75
Paper Mill Bagging	5.50 / 5.75
No. 1 Roofing Bagging	2.25 / 2.50

Domestic Rags (New)
(F.o.b. Boston)

Shirt Cuttings—	
New Light Prints	.07½ / —
Fancy Percales	.08 / —
New White No. 1	.11 / .11¾
New Light Flannelettes	.08 / .08½
Canton Flannels, Bleached	.10 / .11
Underwear Cutters, Bleached	.11½/ —
Underwear Cutters, Unbleached	.11 / .12
Silesias No. 1	.08 / .08½
New Black Silestas	.04½/ —
Red Cotton Cuttings	.05 / —
Blue Overalls	— / .08½
Soft Unbleached	.11 / .12
Blue Cheviots	.08½/ .09
Fancy	.06 / —
Washable	.06 / —
Khaki Cuttings	.06½/ .07½
Corduroy	.03½/ —
Men's Corduroy	.04 / —
Khaki Canvas	— / .06
B. V. D. Cuttings	.11½/ —

Domestic Rags (Old)
F.o.b. Boston)

White No. 1—	
Repacked	5.00 / 5.50
Miscellaneous	4.50 / 5.00
White No. 2—	
Miscellaneous	2.65 / —
Twos and Blues, Repacked	2.75 / —
Old Blue Overalls	4.00 / 4.50
Thirds and Blues, Repacked	2.20 / —
Miscellaneous	1.80 / —
Black Stockings	3.50 / 4.00
Roofing Stock—	
No. 1	1.70 / —
No. 2	1.60 / —
No. 3	1.50 / —
No. 4	1.50 / —
No. 5, Quality A.	1.60 / —
Quality B.	1.50 / —
Quality C.	.95 / —
Old Manila Rope	6.00 / —

Foreign Rags
(F.o.b. Boston)

Canvas	(nominal)
Dark Cottons	(nominal)
New Checks and Blues	(nominal)
Old Fustians	(nominal)
Old Linsey Garments	(nominal)
New Silesias	(nominal)

CHICAGO

Waste Paper
(F.o.b. Chicago) Mill Prices, Baled

Shavings—	
No. 1 Hard White Envelope cuts, one cut	$150.00/ —
No. 1 Hard White Shavings, unruled	140.00/ —
No. 1 Soft White Shavings	120.00/ —
No. 1 White Ledger	85.00/ —
No. 1 Heavy Books & Magazines	35.00/ —
White Blank News	80.00/ 85.00
Mixed Kraft Env. & Bag Cuttings	90.00/ 110.00
No. 1 Assorted Old Kraft	35.00/ —
Overissue News	24.00/ —
No. 1 News	11.00/ —
No. 1 Mixed Paper	11.00/ —
Old Corrugated	23.00/ —
Mill Wrappers	17.00/ —

MARKETS

Blanc Fixe
Prices firm following price rise. Demand strong. Pulp is currently quoted at $87.00 in bags, car lots at works, 6 cents per pound, l.c.l., deld.; by-product $77.50 per ton, car lots, at works, 6 cents per pound, l.c.l., deld.

Bleaching Powder
Supply adequate. Delivery good. Shortage of shipping containers restricts export. Prices range from $4.25 to $4.50 per 100 pound drums, l.c.l. works.

Casein
Prices steady. Demand dull; registers seasonal mill shutdowns. Argentine production off as well as domestic. Current prices on processed acid precipitated casein at 31 to 33 cents per pound for domestic grades and 28 to 29½ cents for imported grades, f.o.b. shipping point.

Caustic Soda
New strike likely to keep output tight through year. Solid caustic is reported at $3.10 per cwt.; flaked and ground is quoted at $3.50 per cwt. in 400 pound drums, $4 to $4.25 per cwt. in 100 pound drums—car lots at works; liquid 50 percent in tank cars at $2.50 per cwt.; liquid 73 percent in tank cars at $2.60 per cwt., at works.

China Clay
Supply excellent. Demand steady. Domestic filled clay is $9 to $11.50 per ton, car lots; coating clay is $14 to $22. Imported clay quotation, short tons, $16 to $35, export warehouse.

Chlorine
With another plant strike bound, supply is tight. Currently quoted at $2.40 per cwt. in single unit tank cars; at $2.70 to $3.90 per cwt., in multi-unit tank cars, f.o.b., works.

Rosin
Supply good. Domestic and foreign buying dull. Gum prices dip 10c a hundred, but resistance to price levels is evident. Gum rosin in drums per 100 pounds net in car lots, f.o.b. Savannah; B, $6.50; G, H, J, K, $7.30. Wood rosin per 100 pounds net, car lots, f.o.b. Savannah; B, $5.00; FF, $6.50.

Rosin Size
Seventy percent gum and pale wood grades. Supply ample. Demand good Tank cars, $6.15 to $6.25, f.o.b. southern shipping point.

Salt Cake
Demand continues ahead of supply with slight improvement in shipments. Production under contract. Domestic salt cake is quoted at $25 to $28.

Soda Ash
Supply somewhat easier, though deliveries behind schedule. Current prices, car lots, per 100 pounds: in bulk, $1.15; in paper bags, $1.40; and in barrels, $1.90.

Sodium Bicarbonate
Strong demand with supply good. Reported as $1.95 per cwt. paper bags, carload lots.

Starch
Prices unchanged. Supply good. Demand eased by mill shutdowns. Pearl grade quoted at $7.00 per 100 pounds; powdered starch at $7.12 per 100 pounds; car lots, New York.

Sulphate of Alumina
Prices unchanged. Supply steady. The commercial grades are quoted at from $1.30 per 100 pounds, in bags, car lots, f.o.b. works. Iron free is $2.50 per 100 pounds in bags, car lots, at works.

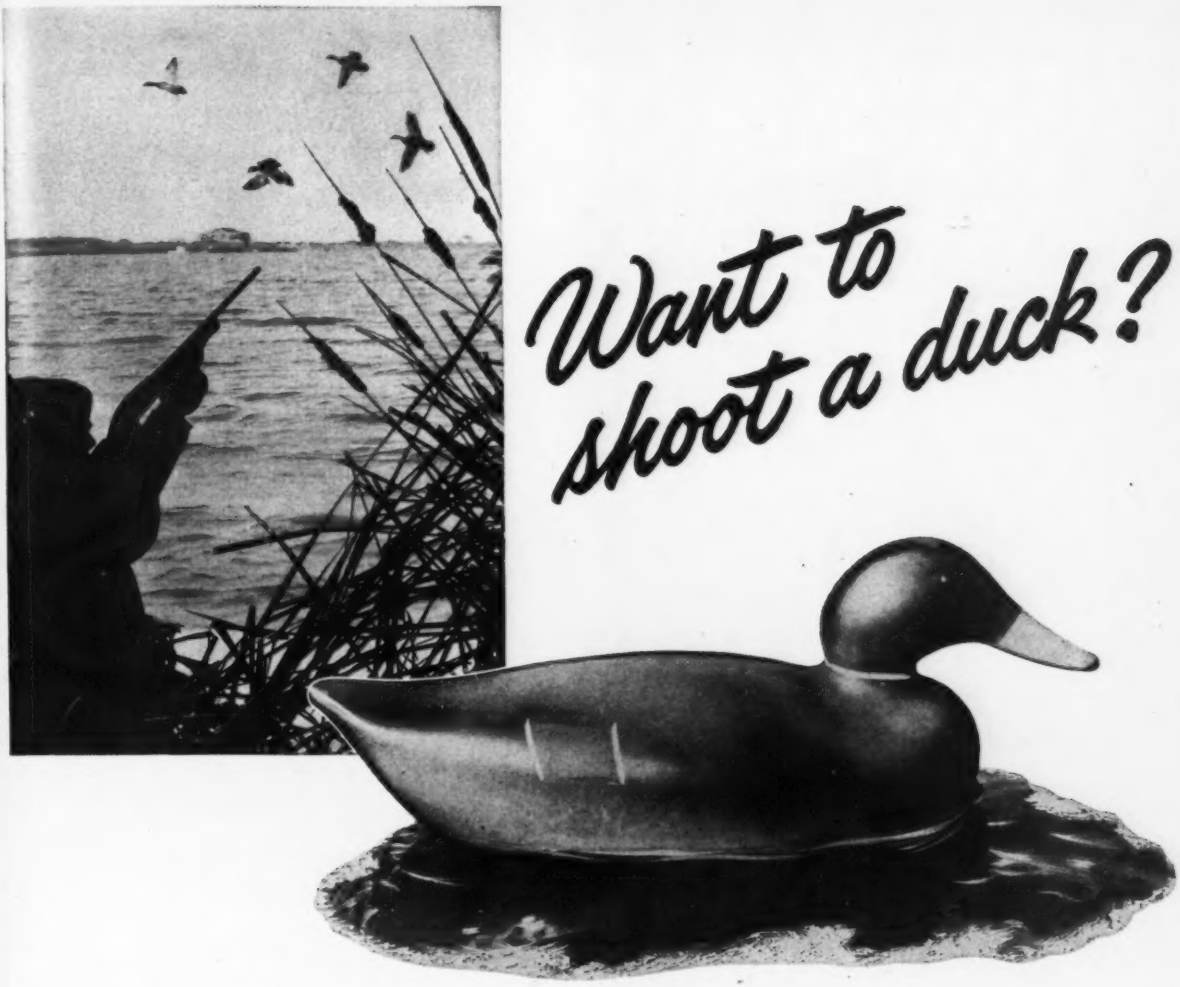
Sulphur
Production shows heavy gain. Prices unchanged. Supplies ample. Annual contracts are quoted at $16 to $18 per long ton, f.o.b. mines; the price f.o.b. at Gulf ports is $17.50 to $19.50 per long ton.

Talc
No change in domestic market. Demand continues far in excess of supply. Domestic grades are currently quoted at $23 per ton in paper sacks, f.o.b. mills; Canadian at $35 and up per ton. All prices in car lots.

Titanium Dioxide
Demand continues extremely tight with no early improvement seen. Shipments on allocation. Anastase 17½-18c pound carload lots, 18-19c l.c.l., rutile, 19½-20c pound carload lots, 20-21c l.c.l.; 50-pound bags, f.o.b. plant, minimum freight allowance.

Cardinal Paper Box Leases Irvington, N. J. Quarters

IRVINGTON, N. J.—The Cardinal Paper Box Co., has leased quarters at 605 South Twenty-First street.



Want to shoot a duck?

You'll learn how the American Anode process sets new targets in manufacturing

NO cousin to the clay pigeon or the old wooden duck decoy, these are rubber ducks you can shoot full of holes—but they won't sink. To the duck that flies the skies, a set of two drakes and one hen sitting on the water look very real indeed. And to the man who goes duck hunting, here are duck decoys that fit conveniently a dozen to the shoe box, won't break off like the old wooden kind and make him grateful to the Rubber Products Division of the Electric Eye Equipment Company, Danville, Illinois, who thought them up.

Thus another manufacturer is opening up another new market thanks to things the American Anode process can do that can't be accomplished any other way. The forms for these ducks are intricate—but they come out all-of-a-piece from a single dipping, ready to be decorated, packaged and sold. Maybe these ducks will give you an idea.

They also demonstrate characteristics you can get with American Anode latices and mixes that stand up under heat and cold . . . resist water, abrasion and strain . . . and that can be sprayed, spread, saturated, dipped or brushed. Call on us for compounded latices of GEON, HYCAR, neoprene, crude rubber and GR-S. For more information about these modern materials and proper methods of using them, please write Department AD-5, American Anode, Inc., 60 Cherry Street, Akron, Ohio.

AMERICAN ANODE
INCORPORATED

CRUDE AND AMERICAN RUBBER LATICES, WATER CEMENTS AND SUSPENSIONS

FINANCIAL RECORD

Preferred Stocks	Per Share Earnings 12 Mos. to 1947	Approx. 3/31/48	Indic. Annual Divd. Rate	July 14 Closing Market Price
Armstrong Cork Co. $3.75 Cum.	$59.74		$3.75	...
Armstrong Cork Co. $4.00 Cum. Conv.	25.85		4.00	...
Celotex Corp. 5% Cum.	24.25c	$25.99f	1.00	19¼
Champion Paper & Fibre $4.50 Cum.			4.50	100
Container Corp. of Amer. 4% Cum.	102.74	92.05	4.00	...
Crown Zellerbach $4.20 Cum.	42.63g	65.06h	4.20	103¼
Crown Zellerbach $4.00 Cum Conv. 2nd	120.13g	170.35h	4.00	118
Dixie Cup Co. $2.50 Cum. Conv. Cl. A	9.16		2.50	...
Flintkote Co. $4 Cum.	81.91	81.06	4.00	...
Robert Gair Co. Inc. 6% Cum.	18.01	17.72	1.20	..
International Paper Co. $4 Cum.	236.51	243.69	4.00	...
Johns Manville $3.50 Cum.	128.81	130.02	3.50	...
Kimberly Clark Corp. 4½% Cum.	70.03		4.50	...
Kimberly Clark Corp. 4% Cum. Conv. 2nd	95.88		4.00	104¼
MacAndrews & Forbes 6% Cum.	62.20	61.93	6.00	...
Mead Corp. 4¾% Cum.	81.56	79.88	4.25	42
Mead Corp. 4% Cum. Conv. 2nd	53.34	31.11	2.00	..
Paraffine Cos. Inc. 4% Cum. Conv.	136.19a	151.93	4.00	...
Rayonier Inc. $2 Cum.	13.58	14.65	2.00	33⅝
St. Regis Paper Co. 4.40% 1st A	76.93	82.07	4.40	90
Scott Paper Co. $3.40 Cum.	43.95	45.37	3.40	..
U. S. Gypsum Co. 7% Cum.	211.34	231.37	7.00	175½
United Wallpaper Inc. 4% Cum. Conv.	46.06a	11.13	2.00	...
West Virginia Pulp & Paper 4½% Cum.	75.75c	75.44	4.50	108⅜
Common Stocks				
APW Products Co.	$1.24	$1.46	$0.25	5⅜
American Writing Paper Corp.	1.61	1.07	0.25	...
Armstrong Cork Co.	6.41		2.60	55½
Celotex Corp.	6.59c	7.08f	1.50	33¼
Certain-Teed Prods. Corp.	3.75	3.83	0 75	18⅛
Champion Paper & Fibre	4.47g	4.99h	1.50	24¼
Congoleum Nairn Co.	4.55		2.00	35½
Container Corp. of America	10.09	8.91	2.00e	36½
Crown Zellerbach	5.22g	6.86h	2.00	31½
Dixie Cup Co.	5.87		1.00	37
Flintkote Co.	6.27	6.16	2.50	38⅝
Robert Gair Co. Inc.	2.83	2.80	0.40	9
Great Northern Paper Co.	4.56		2.40	...
International Paper Co.	15.02	15.49	4.00	67½
Johns-Manville Corp.	3.17	3.17	1.40	37⅝
Kimberly-Clark Corp.	4.29		1.40	21½
MacAndrews & Forbes Co.	3.68	3.67	2.50	...
Marathon Corp.	3.39c	3.61f	1.00	22¾
Mead Corp.	7.33	7.15	2.00	20¼
National Container Corp.	4.13	3.59	1.20	11⅞
Paraffine Cos. Inc.	2.14a	2.39	1.20	...
Rayonier, Inc.	7.30	7.97	1.00	31⅝
Ruberoid Co.	10.88	11.46	2.75	66⅞
St. Regis Paper Co.	2.66	2.82	0.60	12¼
Scott Paper Co.	3.02	3.13	2.20	...
Sutherland Paper Co.	6.87	6.61	2.50	...
Taggart Corp.	1.29		0.60	...
Union Bag & Paper Corp.	7.93	8.29	3.00	36¼
United Board & Carton	5.11b	4.92f	1.00	13⅛
U. S. Gypsum Co.	10.00	10.98	4.00	107½
United Wallpaper	1.46a	0.28		...
West Virginia Pulp & Paper	11.40c	11.36	3.00	49¾

(a) Year ended 6/30/47
(b) Year ended 5/30/47
(c) Year ended October 31, 1947
(e) Plus extras
(f) 12 Months to approximately April 30, 1948
(g) Year ended approximately April 30, 1947
(h) 12 Months to approximately January 30

Dividends Declared

EVERETT, Wash. — Soundview Pulp Co. reported net profit of $2,899,705 or $2.97 a common share for the six months to June 30, against $3,071,450 or $3.14 a share last year.

BOSTON—St. Croix Paper Co. declared a quarterly dividend of $2 on the common stock, payable July 15 to holders of record July 6. The company disbursed $1.50 on April 15 and January 15.

London Firm Places Bowater's New Preferred

LONDON, Eng. — One million shares of 4½ percent cumulative preference stock of one pound sterling in Bowater's Newfoundland Pulp & Paper Mills, Ltd., wholly owned subsidiary of Bowater Paper Corp. of London, Eng., have been privately placed through the London & Yorkshire Trust by the parent company.

An additional newsprint machine with planned capacity of 100,000 tons a year is now being installed at the Newfoundland mills at Cornerbrook, and will come into production in October of this year. Output of the new machine has been sold to U. S. leading newspaper publishers under long-term contracts, it is reported. Total annual productive capacity of the Newfoundland company's mills is estimated at 300,000 tons of newsprint and 55,000 tons of exportable sulphite pulp.

St. Regis Earnings Continue

NEW YORK — St. Regis Paper Co. earnings for the second quarter of 1948 are expected to be shown at approximately the same level as in the first three months of the year, when a quarter profit of 83 cents a common share was reported against 67 cents for the same period of 1947.

The new kraft mill at Pensacola, Fla., was started up in the middle of April, but since full potential output was not obtained at the start, there was little benefit to earnings from the new plant in the second quarter.

With kraft demand continuing high, the new mill is expected to expand St. Regis sales to a new high record in the final half of this year.

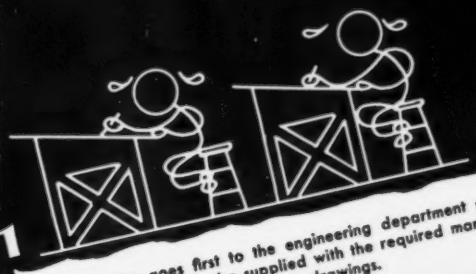
St. Lawrence Stockholders Approve Reorganization Plan

MONTREAL — Recapitalization plans of St. Lawrence Corp., Ltd., reported in PAPER TRADE JOURNAL, issue of June 24, designed to eliminate arrears on Class A stock, have been approved by Common and Class A stockholders. Also approved was a motion to vote the corporation's holdings of common stock in favor of the "paper mills" plan. Stockholders of preferred and common are also to vote on adoption of the plan, under which each existing 4 percent $50 par Class A share will receive one share each of new $2 first preferred, $49 par, and new 75 cents second preferred, $1 par, plus $2 in cash.

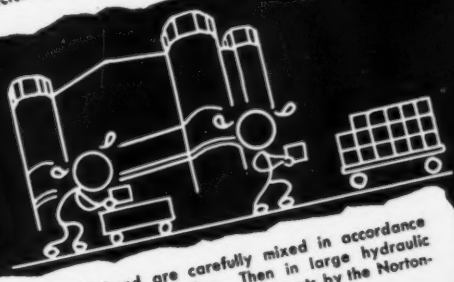
Dry Casein Output Down

WASHINGTON — Dry casein production for May, reported by the Agriculture Department July 7, dropped to the lowest point in 22 years except for 1945. Production this May was 2,170,000 pounds, 43 percent below May 1947, and 34 percent under the five-year average. Stocks held by driers at the end of the month were 2,850,000 pounds, smallest in the eight years for which records are available.

It Takes Eight Weeks and a Lot of "Know-how" to Build a NORTON PULPSTONE



1 Your order goes first to the engineering department so that the factory can be supplied with the required manufacturing data and all necessary drawings.

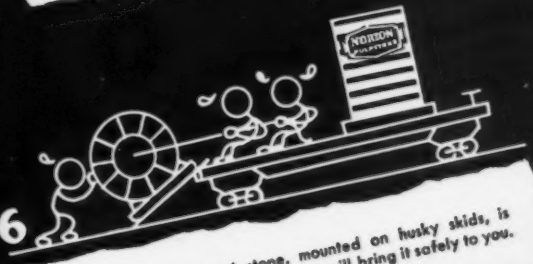


2 Abrasive and bond are carefully mixed in accordance with predetermined formulas. Then in large hydraulic presses the mixture is molded into segments by the Norton-patented **Controlled Structure** process.

3 Next the segments go to the kilns for "firing." Scientifically loaded on cars they take a week-long trip through one of the long tunnel kilns. For about 30 hours they are in the "hot zone"—a third of this time at white heat (2200°F.).

4 Assembly of the vitrified segments into an actual pulpstone is another process that makes use of much Norton "know-how." The unique Norton center construction is a result of over twenty years' experience in building pulpstones.

5 The finished assembly is skillfully trued—a process which requires many hours—and carefully balanced for smooth running.



6 Finally the completed stone, mounted on husky skids, is crated and loaded on the car that will bring it safely to you.

It takes at least eight weeks to build a Norton Pulpstone—and build it right. One reason, of course, is that each Norton Pulpstone is "tailor-made" for its particular job.

First the size must be right to fit the specific grinder for which you have ordered it (diameters range from 42″ to 72″, widths from 20″ to 69″). Then the kind of abrasive and its grit size, the grade (hardness) of the stone and its structure (grain spacing) must all be right to produce **your kind of pulp** from **your kind of wood.**

Highlighted here are just a few of the many steps in the process of building a Norton Pulpstone—each one performed carefully and thoroughly by skilled workers.

NORTON COMPANY, WORCESTER 6, MASS.

NORTON COMPANY OF CANADA LTD., HAMILTON, ONT.

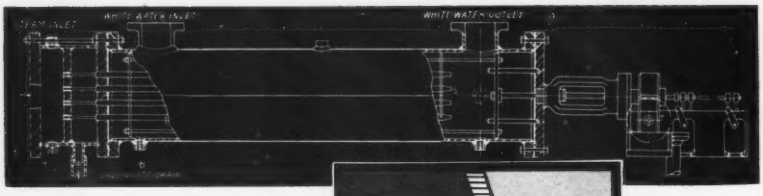
NORTON ABRASIVES

AT LAST IT'S HERE!

.....CONTINUOUS
WHITE WATER HEATING
WITH NO SHUTDOWNS
FOR CLEANING.....

Paracoil Automatic SELF CLEANING WHITE WATER HEATER

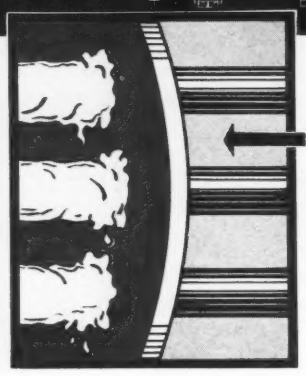
Specially Designed for the Paper Industry



HOW IT WORKS

The transverse heater baffles, which also serve as tube surface cleaners, are connected by tie rods to the yoke plate, which in turn is connected to the drive mechanism at the right. The time controls close the motor circuit at predetermined intervals. The yoke plate moves each baffle longitudinally along the tubes, until the drive mechanism reverses the action and returns the baffles to their original position.

Available in models for either manual, electric motor or hydraulic piston drive. Automatic types operate on adjustable predetermined time schedules.



BAFFLES MOVE FORWARD AND BACKWARD LEAVING TUBES CLEAN AS A WHISTLE

A BATCH OF MANUAL TYPE SELF CLEANING HEAT EXCHANGERS READY FOR SHIPMENT.

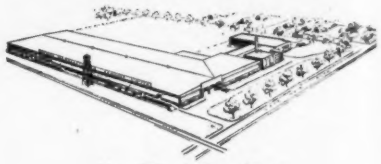
Every Inch of Every Tube Is Thoroughly Cleaned At Every Cycle!
100% Heater Capacity Available At All Times!
Standby Heating Equipment No Longer Needed!
Old Style Heater Cleaning Costs Forever Banished!

DAVIS ENGINEERING CORPORATION
1064 East Grand Street
Elizabeth 4, New Jersey
30 Rockefeller Plaza, New York 20

Woods' St. Lambert Bag Plant Opens

ST. LAMBERT, P. Q. — Woods Mfg. Co., Ltd., has opened an ultra-modern bag plant here for the manufacture of cotton, jute, and multi-wall paper bags.

Situated at Cote Noir Road and St. Charles Street, the 96,000-square-foot



New Woods Bag Plant

plant houses, in addition to the bag plant itself, administration offices, plant offices, machine shop, boiler room, lunch room, garage, employee rest rooms, and locker rooms.

The plant is laid out on a straight-line production basis, from the entry of raw materials at the beginning of the line, to the finished product, baled and weighed, at the other end.

Machinery is completely modern. Bag forming can be done automatically on a single machine, with thre or four colors being printed at the same time. Other up-to-date equipment includes new cloth rolling machines, bag forming and sewing machines. At present, cotton and jute bags are being manufactured. Machinery for the manufacture of multi-wall paper bags is now being installed.

The plant is on the C.N.R. main line, and has its own 12-car siding and unloading platforms, as well as a three-bay truck dock.

Every possible step has been taken to provide ideal working conditions for employes. Walls in the bag plant are finished in Hanley ceramic glazed tile, fluorescent lighting has been installed, and modern washrooms and restrooms and a lunch room and canteen are available.

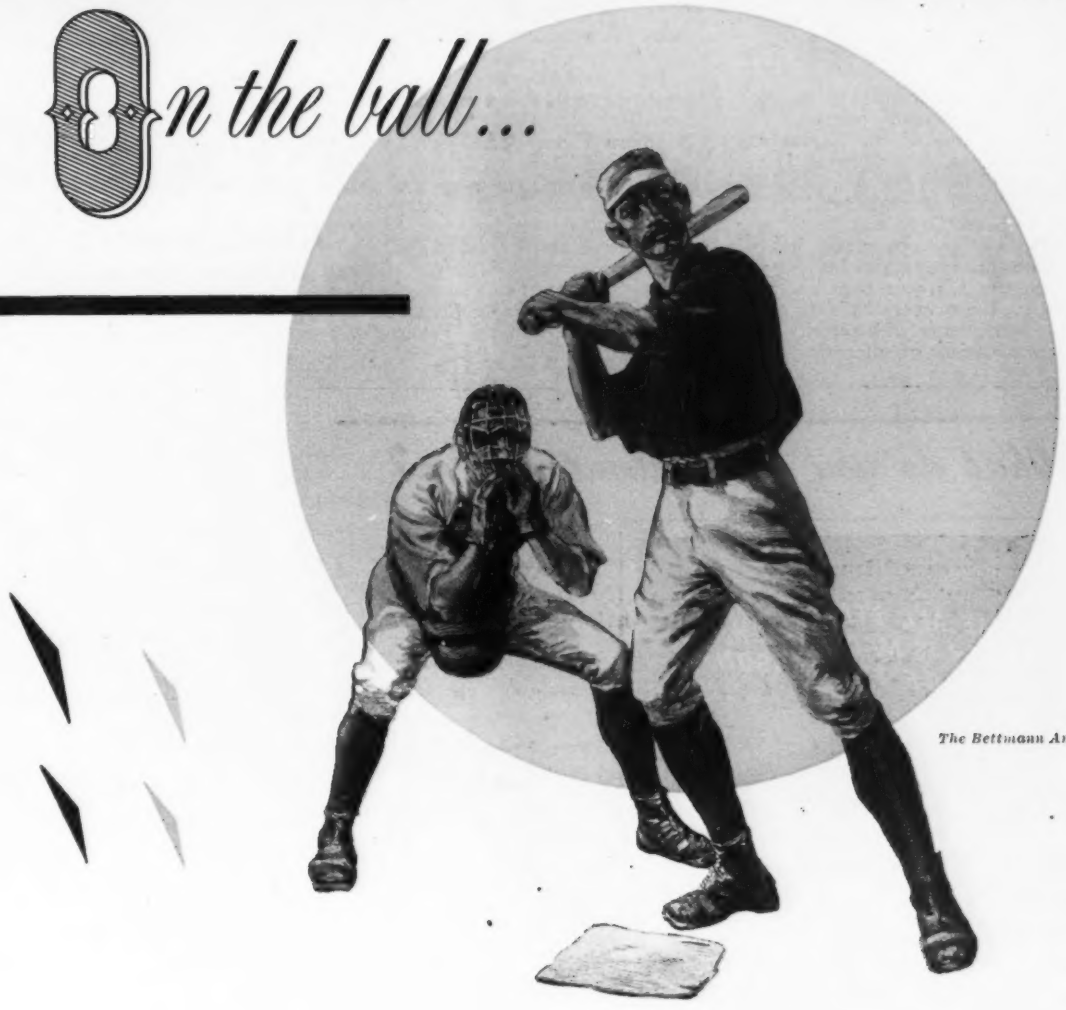
The Woods company operates bag plants in Toronto, Winnipeg, and Calgary, a cotton mill in Welland, Ont., and clothing plants in Hull, Que., and Ogdensburg, N. Y.

Wood Research Laboratory Facilities Enlarged

WASHINGTON—Growing recognition of the value of research has resulted in expansion of the Timber Engineering Co., wood research laboratory. Finding economic uses for low-grade and waste hardwoods is a major project underway at the laboratory and development of a hardwood pulping process has formed the basis for the production of valuable new products out of material formerly considered unusable.

Timber Engineering Co. is an affiliate of the National Lumber Mfr's. Ass'n., 1319 Eighteenth Street, N.W.

On the ball...



The Bettmann Archive

Thorough experience . . . an instinct to pioneer . . . and resourcefulness in meeting industry's needs for quality-controlled electro-chemicals have "sparked" Niagara's services for nearly half a century, and won enduring customer confidence.

It is this rigid adherence to quality standards . . . dependability in products and service at all times . . . that continues to distinguish Niagara Caustic Soda, Caustic Potash, Carbonate of Potash, EBG Liquid Chlorine, Paradichlorobenzene and Niagathal (Tetrachloro Phthalic Anhydride).

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Natural Gas for South

(Continued from page 7)

Blueprints for immediate service to consumers are already prepared. This city will be one of the largest users of natural gas, according to Hansell Hillyer, president of the Savannah Chamber of Commerce and of the South Atlantic Gas Co.

Savannah in recent years has witnessed a business revival, largely through the southern pulp and paper industry. Today every building on Bay Street is humming with activity representing a variety of interests.

The city is prepared to use two billion cubic feet of natural gas (four times the amount of manufactured gas used by the city last year).

The Union Bag & Paper Corp. estimates its needs at six billion cubic feet annually, Mr. Hillyer said, and the Southern Paper Board Corp. will require three billion cubic feet annually.

Other plants named by Mr. Hillyer that would annually use vast quantities of natural gas include the Southern Kraft Division of International Paper at Panama City, Fla.; the Georgia Power Co. at Albany; and the West Virginia Pulp & Paper Co. at Charleston, and International Paper Co. at Georgetown, S. C.

The proposed pipeline, according to Mr. Hillyer, would start in Hattiesburg, Miss., and end in three prongs serving Jacksonville, Charleston and Savannah.

Wheat Straw for Newsprint Used in '70's

HAMILTON, Ontario—"There is nothing new in the use of wheat straw in the manufacture of newsprint in Canada. My father introduced the process away back in the early 1860's and supplied wheat-straw paper to the old Toronto Globe," W. J. Stutt, West Flamboro Township, said on July 2 in commenting on news stories telling of commercial production of this type of newsprint by a Thorold plant.

Mr. Stutt, 90, recalled that his father, the late James Stutt, started the use of wheat straw in paper making owing to difficulty in obtaining a sufficient supply of cotton rags when he was managing a paper mill on the Don River, near Toronto.

The Stutts, father and son, operated the old Wentworth paper mills in West Flamboro, near Dundas, for many years. "It was in 1869 that my father put paper-making machinery into this mill," he said, "and he started the manufacture of straw paper there in 1870." The straw process was discontinued when the use of wood pulp became general.

Mr. Stutt has in his possession samples of the wheat-straw paper, which are marked 40 percent cotton rags, balance wheat straw. One is a marked sample as supplied to the Globe job plant.

Purocell In Production

NEW YORK—Gottesman & Co., Inc., New York City, sole selling agent for Eastern Corp. woodpulps (Bangor, Me.), announces to the trade the commercial production of "Purocell." The name Purocell has been registered in the United States Patent Office.

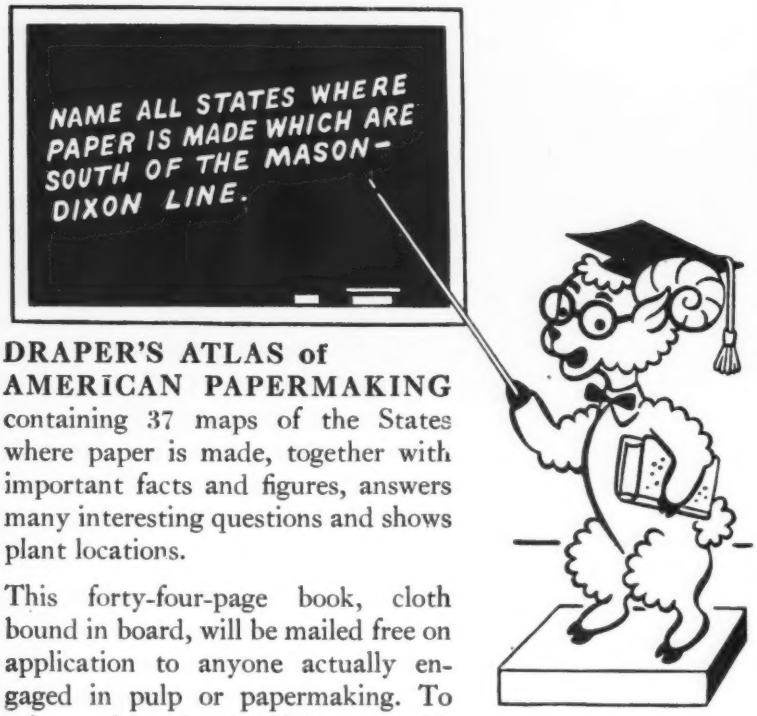
Purocell is "a bleached cellulose fibre produced by the Eastern Corp., purified to bring out the exceptional qualities of brightness, cleanliness, strength and workability that make it especially suitable for high grade writing, bond, ledger and other papers," it is stated.

Purocell is now being used in Eastern's Atlantic bond and other fine business papers. The company's mills are at South Brewer and Lincoln, Me., where over 125,000 tons of pulp and paper are produced annually.

NEW BBB DIRECTOR

RAYMOND J. LEE, vice-president of the Lockport Felt Co., Newfane, N. Y., was elected to the board of directors of the National Better Business Bureau of New York City on June 25. He is the first executive connected with the papermaking industry thus honored.

What do you know about Paper?



DRAPER'S ATLAS of AMERICAN PAPERMAKING containing 37 maps of the States where paper is made, together with important facts and figures, answers many interesting questions and shows plant locations.

This forty-four-page book, cloth bound in board, will be mailed free on application to anyone actually engaged in pulp or papermaking. To others, the price is $2.00 postpaid, while the edition lasts.

The DRAPER Felt

DRAPER BROTHERS COMPANY

Woolen Manufacturers Since 1856

CANTON, MASSACHUSETTS

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WALTER A. SALMONSON, 519-20 White Bldg., Seattle, Wash. — L. L. GRIFFITHS, Jr., Kalamazoo, Mich.

Answer to Question No. 7 .ariz ,sexaT ,krA ,aL ,alF ,aL ,C .S ,nneT ,C .N

HYCAR AMERICAN RUBBER LATEX...
imparts valuable properties to pulp and paper

HYCAR latex added directly to the pulp in the beater or head box, or used as an impregnant for paper, imparts valuable properties not otherwise readily obtained.

Tear and wet strength are considerably increased. Resistance to oils, solvents and chemicals is obtained, with retention of good aging properties. The addition of Hycar also insures excellent flex life and scuff resistance, and in thick papers prevents separation of the laminations.

Thus, better physical properties may be obtained in high grade pulp. In other cases the use of lower grade stock may be permitted because of improved physical properties obtained by the use of Hycar latex. Paper is made adaptable to fields where it is not now used.

Present and potential applications for papers of this sort range from wallpaper to insoles, from gaskets to leather replacement material, from shelf liners to packaging papers.

HYCAR latex is very easy to use. In most applications no vulcanization is required. Normal drying times are used. And HYCAR latex is an inherently safe material to handle. *No solvent system is needed.*

We would be glad to work with you on any problems relating to the use of HYCAR latex. For more information, please write Department HJ-7, B. F. Goodrich Chemical Company, Rose Building Cleveland 15, Ohio.

Hycar
Reg. U. S. Pat. Off.
American Rubber

B. F. Goodrich Chemical Company

A DIVISION OF THE B. F. GOODRICH COMPANY

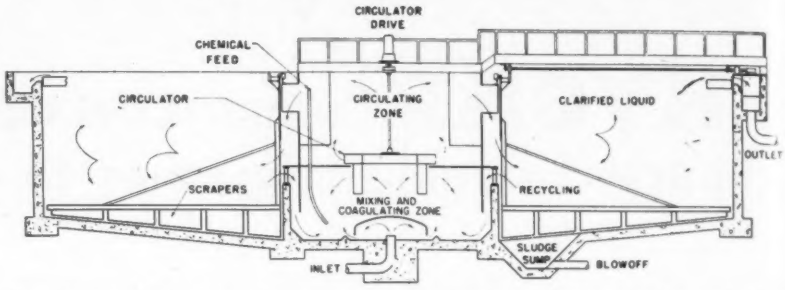
Infilco Cyclator Treats Paper Mill White Water

CHICAGO—Infilco Inc., manufacturer of water conditioning and sewage and trade-waste treating equipment, report successful development of a new apparatus known as the Cyclator for the economical treatment of paper mill white waters and other industrial wastes.

With public opinion tightening state laws and federal laws on anti-stream pollution imminent, paper mills face the prospect of substantial and largely unrecoverable capital expenditures for white water treating equipment to comply with present or pending legislation.

After more than ten years of research, Infilco engineers have brought forth the Cyclator, designed with three main objectives in view: maximum clarification of white waters, maximum recovery of usable fibers, and minimum operating costs. An installation at the River Raisin Paper Co. at Monroe, Mich., has been particularly gratifying in these three respects according to Infilco officials.

This installation, in operation for eight months, treats white waters from two cylinder machines making approximately 200 tons of liner board a day. Reports states that the Cyclator reduces suspended solids in the white waters from 4.5 pounds per thousand gallons to 0.25 pounds per thousand gallons and effects a reduction in five day B.O.D. from 128 p.p.m. to 62 p.p.m. Consistency of the recovered reusable fibers has been slightly in excess of one percent. Value of the recovered fibers has been about $122 per day, which is somewhat higher than total operating costs including maintenance and depreciation.



Line diagram showing general arrangement of the "Cyclator." Pattern of white water flow during treatment is indicated by arows.

The process used in the Cyclator is particularly adaptable to treatment of wastes in which precipitate volume is upward of ten percent. The accompanying line diagram shows the general arrangement of the Cyclator and the pattern of flow during treatment.

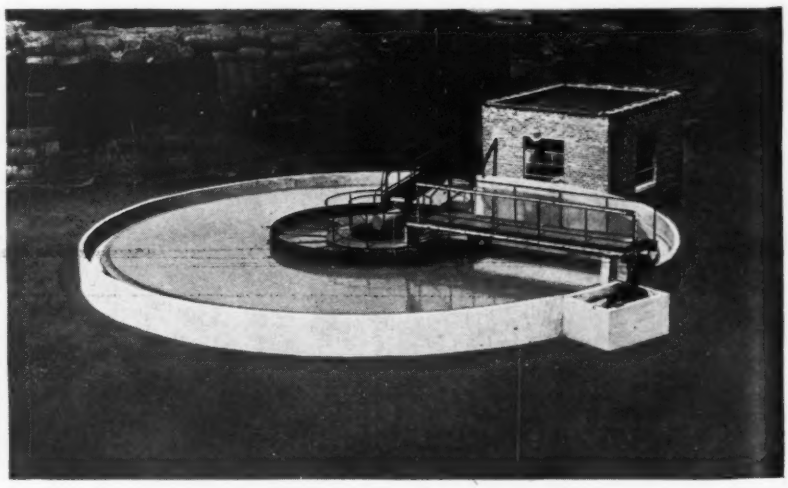
The process starts in the mixing zone where white waters and chemicals are added in the presenct of existing solids to which the newly formed precipitates and the fibers will adhere. This recycling of previously precipitated fibers results in a number of benefits. The white water is coagulated in the presence of a thick slurry of previously formed precipitates having a volume at least twice that of the white water undergoing treatment. This method is all-important to obtain high fiber consistencies recovered for reuse as well as to obtain minimum suspended solids in the finished water, Infilco Inc., states.

A variable speed circulator (a low speed, low head pump) lifts the coagulated mixture into the circulating zones. These zones consist of two concentric sections with an upward flow in the inner section and a downward flow in the outer. Flow then passes into the clarification zone where precipitates are settled out and clarified water is withdrawn at the surface.

The entire outer area of the basin is a relatively quiescent zone in which the precipitated solids settle. The solids are then thickened as they are moved to a collection sump by the rotating scraper mechanism. It is at this point that the valuable fibers are recovered for reuse.

All operating functions are controlled by a meter so that chemicals applied are proportional to white water flows and the consistency of recovered fibers is kept constant by the same control.

Now installed in three plants, with consistently favorable results, the Cyclator will be made a permanent addition to the Infilco line of equipment.



A typical Cyclator installation at plant of River Raisin Paper Co., Monroe, Mich.

fortification

"Virginia" Liquid Sulfur Dioxide (SO_2) can be used to advantage to fortify the cooking acid used in the manufacture of sulfite pulp. This increases the concentration of sulfur dioxide to such an extent that production is speeded-up considerably, and definite economies are effected. You should investigate the possibilities of using "Virginia" Liquid SO_2 to fortify cooking acid or augment limited burner capacity.

●

Send for descriptive literature on "Virginia" Liquid Sulfur Dioxide. Write Virginia Smelting Company, West Norfolk 3, Virginia.

VIRGINIA
Liquid Sulfur Dioxide

Do you want

Higher Brightness at Low Cost

. . . as little as 4% CELITE*

may increase brightness as much as 5 points

Paper makers throughout the industry report that Celite is proving a simple, yet effective solution to the problem of getting higher brightness.

They find that increases in sheet brightness of as much as five points (Tappi) are frequently obtained by the addition of as little as 4 per cent of Celite to the furnish.

Two Celite grades, developed specially to meet the demand for higher brightness at low cost, are producing these results. Of exceptionally high intrinsic brightness, they also have the characteristic Celite suspension properties which assure high retention in the sheet. They are used most effectively in conjunction with titanium dioxide.

Brochure FA-31A contains many helpful suggestions for obtaining higher brightness through the use of Celite. A copy is yours for the asking. Address Johns-Manville, Box 290, New York 16, N. Y.

*CELITE is Johns-Manville's brand name for its diatomite products. Reg. U. S. Pat. Off.

OBITUARY

Philip A. Carr

Philip A. Carr, 53, superintendent of the pulp department of the Championship International Paper Co., Lawrence, Mass., died at his home on July 2 following a brief illness. A native of Lawrence, he was a vestryman of Grace Episcopal Church and was active in Masonic circles. Surviving Mr. Carr are his widow, Mrs. Margaret Williscroft Carr; two brothers, Percy W. Carr of Maplewood, N. J., and Kenneth L. Carr of Mundelein, Ill.; and a sister, Mrs. Lloyd R. Clark of Elizabeth, N. J.

George B. McGlade

George B. McGlade, 52, chairman of the board and president and general manager of the ACCO Products Corp., Ogdensburg, N. Y., looseleaf binder manufacturer, died on July 7 after an illness of several weeks. Born in Syracuse, Mr. McGlade removed to Ogdensburg from Long Island City about a year ago.

George O. Muhlfield

George O. Muhlfeld, 73, vice-chairman of the board and a director of Stone & Webster, Inc., civil engineers, New York City, died at his home in Englewood, N. J., on July 8. Mr. Muhlfeld, who served 47 years with the firm, supervised construction of many large hydro-electric dams here and abroad. He was a native of Peru, Ind.

Surviving Mr. Muhlfeld are his widow, Mrs. Emma Bearss Muhlfeld; a daughter, Miss Emma A. Muhlfeld; and a son, Frank E. Muhlfeld.

Charles I. Maguire

Charles I. Maguire, 85, president-treasurer of the Walter R. Miller Co., Bingham, N. Y., wholesale and retail stationer for 56 years, died on June 17 following a two-month illness. Surviving Mr. Maguire is his widow, Mrs. Sara Croft Maguire.

T. E. Buresch

T. E. Buresch, 89, who operated the Corona Paper Box Co., in Buffalo, N. Y., for more than half a century, died on July 4 at Meyer Memorial Hospital following a two-week illness. Surviving Mr. Buresch are two sons.

Reuben Salwen

Reuben Salwen of the Joe Salwen Paper Products Corp., New York City, died on June 24.

Tuway Building Sold

NEW YORK—The Tuway Envelope & Paper Co., Inc., has sold its 17-story loft building at 37 West Forty-seventh street.

National Gypsum Promotes Two —Floats Stock Issue

BUFFALO, N. Y.—John W. Brown has been appointed general sales manager of the National Gypsum Co. Mr. Brown, who will work out of the Buffalo office, joined the firm in 1935 and since 1941 has been sales manager of the Dallas district. The company also announced appointment of James J. Ryan to the new position of general commodity manager. Mr. Ryan has been with National Gypsum since 1934.

President Melvin H. Baker said in a letter to stockholders that of the 422,467 additional common shares offered recently, 325,972 were subscribed for by stockholders and 80,830 were purchased by persons who didn't own any National Gypsum stock at the time the new issue was offered but acquired rights to buy the new shares. Only 15,655 shares remain to be taken by the underwriters. Proceeds, $5,428,700, will be added to working capital.

Kleenex Testing Nickel Seller

CHICAGO — International Cellucotton Products Co., maker of Kleenex, is planning to expand limited market tests on its new five-cent pocket packet of the tissue item. Although the new size was developed as the result of numerous consumer suggestions, the company does not plan any strong promotion until the tests are more complete.

Now Available

SAP BROWN

from

American Lignite

Unlimited Quantities
Lowest Prices

Try American Sap Brown for low cost brown paper with or without toning colors. Ask for samples and information.

American Lignite Products Co.
Ione, Calif.

Eastern Agent, B. M. Snyder III
621 Cherry St.
Phila. 6, Pa.

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1948		Corresponding Weeks—1947	
May 29	98.9	May 31	105.6
June 5	92.9	June 7	106.7
June 12	95.0	June 14	107.2
June 19	95.0	June 21	106.1
June 26	99.8	June 28	103.7
July 3	91.1	July 5	62.7

COMPARATIVE MONTHLY SUMMARIES

1947		May	106.2	Oct.	109.5	1948	
Jan.	102.1	June	106.0	Nov.	109.3	Jan.	100.9
Feb.	105.9	July	93.5	Dec.	101.5	Feb.	100.3
Mar.	106.1	Aug.	104.2			Mar.	100.6
Apr.	105.1	Sept.	102.0	Year Av.	104.3	Apr.	102.5
						May	100.4
						June	95.3

COMPARATIVE YEARLY SUMMARIES

	1941	1942	1943	1944	1945	1946	1947	1948
Year to Date	93.5	99.1	88.8	88.6	88.9	100.4	105.5	99.8
Year Average	97.4	90.4	87.8	88.1	89.4	101.1	104.3	

NOTE: *As of January 10 capacity base increased by 13.3%*

PAPERBOARD OPERATING RATIOS†

Current Weeks—1948		Corresponding Weeks—1947	
May 29	100	May 31	98
June 5	87	June 7	98
June 12	101	June 14	103
June 19	97	June 21	102
June 26	97	June 28	102
July 3	89	July 5	78

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1947	99	103	101	100	101	101	90	99	96	101	99	89	98
1948	99	100	102	102	100	94							

* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.

INDUSTRIAL DEVELOPMENT

Gate and Globe Valve Maintenance and Repair

Data Developed by The Crane Company, Chicago, Ill.

Good valve service consists of proper selection and installation followed by prompt maintenance and repair of leaking or damaged valves. Even the best valve cannot be expected to work at its best and stay on the job if it's incorrectly installed. Nor can it be expected to stand up very long after it develops a seep or a leak.

After valves have been properly selected and installed, their maintenance can be reduced by a surprising amount through periodic inspection. Service conditions and frequency of operation will determine the frequency of inspections. But once the interval of valve inspection has been established it should be made regularly and systematically. When routine valve inspection discloses a leakage, steps should be taken immediately to correct the trouble before the valve destroys itself.

Stuffing Box Leaks

Stuffing box leakage is one of the most common troubles encountered in valves. It usually happens when improper packing is used or when packing is worn. Leaks may be evidenced by steam "flags," by unaccountable presence of moisture on piping or valve bodies, or by outright dripping. Leaks should be attended to immediately when discovered. Don't hesitate to break into insu'ation if a leak is suspected underneath. Such hidden leaks are especially damaging to bolts, pipe and flanges. All leaks are conducive to corrosion.

If it is necessary to hunt a leak under pipe insulation, it is suggested, for a minimum of damage to the insulation, that a puncture be made with a wire at the point of suspicion, permitting leakage to escape. Another practical method is to insert a pipe nipple through the insulation at each flange joint. Drainage from the nipples will indicate leakage in the line.

Neglected stuffing-box leaks will eventually damage valve stems. Most stuffing-box leaks can be stopped simply by pulling up the packing bolts, or by tightening the valve gland nut. Be sure to tighten bolts evenly. If tightening the packing gland does not stop leaking, it is a simple matter to replace the packing. To repack, loosen all stuffing-box parts and remove the old packing, using a bent wire or other hook to clean the box thoroughly. Insert the new packing and tamp it well into place. Add a few drops of oil between layers to help work in the new material. If ring packing is used, be sure to stagger the ring splits, so that they are not all in line.

Gasket Leaks

If a leak is allowed to continue at a bonnet joint or a flange joint, it is not just the gasket that suffers. The

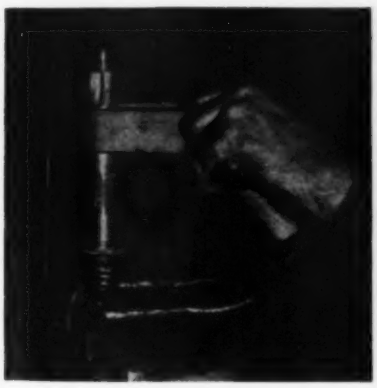


Figure 1

Figure 2

Figure 3

INDUSTRIAL DEVELOPMENT

Paper Trade Journal, in this new section, proposes to make space available for discussion of administration and operational problems of the pulp and paper industry, as well as for the presentation of independent studies and research on technical and engineering subjects. Noteworthy features of paper mills, converting plants, associated industries and institutions also will be presented, as they become available. These pages will be open to all who are qualified to discuss subjects within these limits. Manuscripts, submitted for approval, will be welcomed.—E. P. McGINN, Industrial Editor.

Figure 4

Figure 5

Figure 6

Figure 7

Figure 8

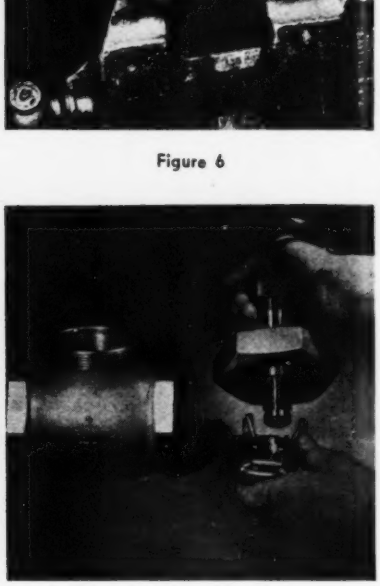


Figure 9

joint faces are soon ruined. If bolt takeup does not cure a joint leak, replace the gasket immediately. The type of gasket material to be used is important. Gaskets are of three general types; flat-ring gaskets which cover the face of the flange to the inside of the bolt holes, full-face gaskets through which the flange bolts pass, and metal rings of elliptical cross-section fitting into machined grooves flanges. Gasket materials comprise rubber, asbestos composition and soft metals. Rubber gaskets are generally used for low pressures at normal temperature. As pressures increase in cold service, and for hot service up to 750 F, asbestos compositions are frequently used. Metallic gaskets are extensively used when steel valves are installed.

Variations in gasket materials are so wide, however, that manufacturers' recommendations should be consulted before the material to be used is selected. Various types of gaskets take different treatments before they are inserted in the joints.

Repair of Seat Leaks

If a valve cannot be shut off tightly, the cause of the trouble should be investigated without delay. If a leak is neglected, the seating surfaces may be soon damaged to the extent that replacement of parts or of the complete valve may be necessary.

When a leaky gate valve is discovered, remove the bonnet and examine the disc and body thoroughly to determine the extent of damage to body rings and disc. If corrosion has caused excessive pitting or eating away of metal as in the case of guide ribs in body, it may be impractical to attempt repairs. A complete check-up and servicing of all parts of the valve is recommended. Remove the stem from the bonnet and examine it for scoring and pitting where the packing contacts the stem. Light polishing with fine emery cloth is all that may be needed to put the stem in good condition. *(Fig. 1)*

Remove all packing and thoroughly clean the stuffing box. *(Fig. 2)* At the same time clean the inside of the valve bonnet and other parts to remove all dirt, scale, corrosion, etc., so that the interior of the valve will be free of all foreign particles. If the valve has a flat gasket, it should be removed completely and replaced with one of proper material and size. *(Fig. 3)*

If a ring type joint is used, the oval or octagonal metal ring can be cleaned, and, if not pitted, can be used again. After the cleaning and examining of all parts has been completed, and it is found possible to repair the valve by refinishing disc and body seat rings, or by replacement of body seat rings, proceed as follows:

Place the disc in a vise with seat face up. *(Fig. 4)*

Wrap a piece of fine emery cloth around a flat tool and rub or lap the entire bearing surface (both sides of dics), to a smooth even finish. Remove as little as possible. The usual cuts and scratches found on body seat rings can also be repaired by lapping. Use an emery block small enough to permit rubbing of the seat-ring faces all around. *(Fig. 5)*

Work carefully and watch closely. Avoid removal of too much metal to prevent the disc from seating too low. When seating surfaces (discs and body seat rings) seem to be properly lapped, coat the face of the disc with Prussian Blue and drop the disc into the body to check the bearing. When a good continuous contact is obtained between the disc and body seat-ring face, the valve will be tight and is now ready for reassembly. When assem-

bling, insert the stem in the bonnet. Install new packing. Assemble other parts, including the gland and gland flange, and then attach the disc to the stem. Replace the bonnet gasket, and place the complete assembly in the body. Lift the disc off the body seat-ring face so that the bonnet can be properly seated on the body before bolts are tightened. Pull the bonnet bolts up evenly in pairs diametrically opposite each other. Good practice suggests testing the repaired valve before putting back in service. This assures that repairs have been properly made and that the stuffing box is tight.

When body seat rings in gate valves must be replaced, they can be removed and replaced best with a power lathe. Chuck the body with the rings vertical so that the seat faces will be parallel with the face plate. Use a steel bar across the body ring lugs to unscrew them. Removal of rings can be accomplished by hand by means of a cold chisel or hack saw to split the ring and then collapse it. Extreme caution should be taken so that the ring threads in the body are not damaged. New rings must be pulled up tight against the shoulder on the ring so that leakage will not occur around the body ring. To tighten, place a steel bar across the lugs and pull up with a wrench. Be sure to coat the threads with a good lubricant before inserting the ring into the body. Lap in the same as when repairing a ring as shown in Illustration 6 for a perfect fit to the disc.

Globe and Angle Valves

Repairs on globe and angle valves frequently can be made without removing them from the line. However, it is desirable, when any repairs are needed, to remove the valve from the line for thorough inspection and cleaning. To illustrate the general procedure for regrinding discs and seats in globe valves, a plug type disc valve is used. However, the same method applies to other globe and angle valves except those with composition discs. Procedure is as follows:

Hold the valve firmly in a vise, with the stem vertical. Remove the bonnet assembly and examine and clean all parts thoroughly. Remove the stem from the bonnet, place in the vise and unscrew the disc stem ring. *(Fig. 6)*

Lift out the stem and insert a spacer or coin inside of the disc. *(Fig. 7)*

Replace the stem and tighten the disc stem ring. The spacer takes up the clearance between the disc and the stem. Apply an emery-base grinding compound to both the disc and the seat. A light coating of compound is all that is necessary.

Place the body and bonnet together. If the valve is a union bonnet design, the union ring should be screwed on, but not tightly. For a bolted bonnet insert a couple of bolts, but do not tighten the bolts. This will provide a guide for the stem.

With a firm hold on the hand wheel, apply pressure and oscillate the wheel steadily until all pitting is removed and a continuous smooth bearing on the seating surface is obtained. Grind no more than is necessary for good bearing. When grinding is completed, clean the disc seat and body of all compound. Use Prussian Blue to determine if a good bearing has been obtained. The valve can then be reassembled. (Be sure to remove the spacer from the disc so that it will have free swivel action on the stem.)

When the body seat rings have been damaged beyond repair, they should be replaced. This can be accomplished with a tool specifically designed for the purpose, or by means of a bar fitted into the lugs or slots in the body ring. Before using the valve it is advisable to give it a pressure test to be sure of tightness of the seat and stuffing box.

Composition Discs

Replacing a composition disc in a globe or angle valve as soon as a seat leak is discovered will add much to the valve's life. The procedure is easy.

First turn the stem to fully open position. Unscrew the bonnet joint and lift out the bonnet assembly *(Fig. 8)*. Turn the stem down slightly until the disc holder slips off. Remove the disc retaining nut on the under side of the holder, and replace the disc. *(Fig. 9)* Reassemble the valve.

Where frequent disc changing is necessary, keep a few extra disc holders and discs on hand. Holders can be loaded with discs for various services when convenient. This feature simplifies maintenance and stock problems for composition disc-valve parts.

Engineering the Air Compressor Installation for Maximum Efficiency*

Part I—Planning, Selecting and Installing the Compressed Air Plant

To obtain the benefits and the advantages of compressed air, planning is essential. To achieve the savings and results expected, care must be exercised in the selection of the equipment, in its installation, and in laying out the distribution system. This article will suggest important questions to consider in planning the compressed air plant.

A compressed air plant *(Fig. 1)* consists of one or more compressors, each with the necessary driver, control or regulation, intake air filter, aftercooler, air receiver, and interconnecting piping, together with a distribution system to carry the air to points of use.

OBJECTIVE OF INSTALLATION:- The object of installing a compressed air plant is to provide sufficient quantity of air to the work at sufficient pressure for efficient operation.

Before attempting to determine the amount of compressed air necessary, a thorough study should be made to provide for the use of air power in all applications for which it is suitable. The importance of this study in approaching the problem of installing the compressed air plant is obvious since it will anticipate possible future needs as well as present ones.

The information obtained from the study previously referred to will then become basic in approaching the problem of engineering the compressed air installation in any particular plant. In working out an installation, a series of analyses is recommended. These include: (1) Necessary compressor capacity; (2) Number of compressor units; (3) Location of compressor units; (4)

*Based on material contained in the new "Compressed Air Handbook" published by Compressed Air and Gas Institute.

Regulation of compressed air plant; and (5) Compressed air distribution system.

(1) *Necessary Compressor Capacity:* The proper capacity to install is, of course, a vital question, requiring careful analysis. A study of air-operated devices in a typical plant will show that many of these devices operate almost continuously but there are others which operate infrequently but require a relatively large air supply when in use. It will also be discovered that the actual amount of air used by the individual device will vary considerably in different applications.

The first suggestion is, therefore, that the average air consumption of air-operated tools be ascertained. This may be obtained from manufacturers' literature or may be closely approximated by actual test. Care must be taken not to assume that all air-operated devices consume their maximum under all conditions, as otherwise a false plant size will be developed. Therefore, the Load Factor of the device must be considered.

Relatively few air-powered devices use air continuously. Pneumatic tools of all types operate intermittently and their *net* air consumption is considerably less than their maximum. The ratio of *actual* air consumption to the maximum continuous full load air consumption is known as "Load Factor."

Two items are involved in this term "Load Factor." The first is the "Time Factor" or percentage of total time that the device actually uses air. Obviously, if a number of devices are operated from a compressor plant, and none of them operate all the time, it is reasonable to assume, and experience will bear this out, that the maximum air used in cubic feet per minute is much less than the total which would be required if they were all operating at the same instant at full load.

The second item in the term "Load Factor" will depend on what might be called the "Work Factor," or the per cent of maximum possible work output per minute which is actually done by the device. For example, the air consumption of a grinder with full open throttle varies considerably, depending upon how hard the operator pushes it against the work. The "Work Factor" is, therefore, the ratio of air consumption at the actual conditions of operation to the air consumption when the tool is fully loaded.

"Load Factor" is actually the product of "Time Factor" and "Work Factor."

In one shop studied, the actual air consumed was only 15 percent of the supposed full-time rated air requirements.

In a large installation the actual load was only 7.6 percent of the load which might be expected, based on the total tools in operation, plus stock and reserves. If the air supply had been figured correctly on the tools actually in use, the air required would be 15 percent of the requirements for the tools in use.

In determining Load Factor, care should be taken to eliminate the tools on hand in the store-room or not in use.

It would be wise to discuss these points in detail with the tool manufacturer before finally deciding on the actual air consumption needed.

The above remarks apply to the more steadily operated air tools and appliances. A study of the uses of air power which cause heavy but usually short-time demands will develop added capacity required for these operations. The possibility of storing air in large receivers should be considered although this can be helpful only to provide for peak demands of very short duration.

Some comment should be made on the practice of adding a percentage to calculated compressor capacity to provide for piping leakage. This has been due largely to the fact that compressed air is so harmless that it is not considered vitally necessary for an air system to be tight. Electrical lines must be carefully insulated—leaks cannot be tolerated. Steam lines are kept tight because of danger and also because steam leaks are objectionable. Refrigerating systems must be tight, both because leakage is expensive and the gas is frequently obnoxious.

There is no more justification for allowing compressed air wastage than there is in buying a compressor with capacity controls, letting it operate continuously at full capacity and discharging the surplus through relief valves to the atmosphere.

Previously, it has been customary to add an arbitrary item of about ten per cent for leakage. Compare this to an acceptable limit in the fuel gas distribution field of less than one cubic foot per minute per mile of 3-inch line. Air lines can be made just as tight as other piping systems and can be kept tight. It pays to do so.

Before determining the final compressor capacity, consider carefully that once compressed air is available, its versatility will of itself lead to a magnitude of profitable uses and applications not originally anticipated. Although mechanically it is no problem to increase the size of a compressed air plant since any number of units can discharge into the same system, it is prudent to provide some excess capacity for growth when the plant size is originally considered, including piping system. What this excess capacity for future growth should be will depend largely on individual conditions and total known requirements.

It is less difficult to arrive at the proper capacity needed for a plant extension than for a new installation. Local experience, compressor load factors, tool load factors, etc., either known or readily determined, provide a sound basis for decision.

The most frequent indication that more compressor capacity may be needed for an "overloaded" plant is *low air pressure,* which reduces shop production alarmingly. This is discussed in Part II of this article.

Based on a careful log of the pressures throughout the production areas, present compressor operating load factors and peaks in demand (periods of unusually low air pressure), it is possible to determine with reasonable accuracy the additional compressor capacity required to maintain full air pressure at the working positions and thus increase tool effectiveness and production to the maximum. (note: In all calculations compressed air measurements should be in terms of cubic feet per minute of *actual free air.*)

(2) *Number of Compressor Units:* The number of units into which total capacity should be divided is important. Air compressors are sturdy machines but, like all mechanical and electrical equipment, they require maintenance and must occasionally be taken out of service. Compressed air supply during maintenance periods is provided for differently in almost every plant. If the supply of compressed air is vital to continued production, the answer is usually determined by a comparison of the cost of standby capacity with the value of the production loss.

Many plants require a relatively small volume of air continuously, even when the plant is not in production. A small unit of proper size to take care of such requirements over week-ends, holidays, etc., is often desirable and efficient. Examples of such requirements are dry pipe sprinkler systems, oil burners on furnaces which must be kept hot over night or week end; air supply for tools used by plant maintenance crews over week ends, etc.

(3) *Location of Compressor Units:* The location of a compressed air plant with relation to the points of air use should be given some study. A central plant housing all the compressors involved has advantages in unified operation and care, better supervision, and probably less labor cost. In a central plant, it is probable that no more compressors will be kept operating than are necessary to maintain pressure. The load factor and operating efficiency of each unit will, therefore, tend to be relatively high.

It is possible, however, that a central plant cannot be so located that satisfactory distribution of air and maintenance of pressures may be obtained without excessive piping costs. In such a case, it may be better to divide the compressor plant into two or more installations at or near specific load centers, interconnecting the plant piping so that air may be distributed either way to meet peak load requirements. Of course, the plant should be placed as close as possible to the larger load centers. This reduces piping costs and results in higher pressure at the tools with closer control of the pressure.

Where two or more compressors are installed in various parts of the plant, the equipment should not be placed in some obscure corner with no one to look after it. Such an installation will surely be neglected with costly consequences.

(4) *Regulation of Compressed Air Plants:* Since the demand for compressed air usually varies widely from time to time, some form of capacity control is required. Two general methods are available. The first, known as speed and pressure regulation, varies the speed of the compressor according to the demand for air such as is usually done in a steam driven compressor. The second, known as constant speed regulation, operates the compressor at a constant speed and varies the capacity by any one of several types of unloading systems as is usually done in a motor-driven compressor.

For general industrial use, control of pressure closer than a five per cent range between full load and no load is unnecessary and should be avoided. Much closer regulation of the pressure can be provided where special conditions require it.

Wherever possible, pressure regulators should be so selected and adjusted that large units will act as base load units and unload only after smaller units have been shut down. Of course, where the requirements have diminished to where one of the smaller units could handle same, the large unit should be shut down. In this way, the overall economy will be improved.

(5) *Compressed Air Distribution System:* Any drop in pressure between the compressor and the point of use of the compressed air is irrecoverable loss. The distribution system is, therefore, one of the most important elements of the compressed air plant. In planning it, the following general rules should be observed:

(a) Pipe sizes should be large enough so that the pressure drop between the receiver and the point of use will not exceed ten per cent of the initial pressure. Provision should be made not only for present air capacity but also for reasonable future growth.

(b) Where possible, use a loop system around the plant and within each shop and building. This gives a two-way distribution to the point where the air demand is greatest.

(c) Long distribution lines should have liberal size receivers located near the far ends or at the points of occasional heavy use. Many peak demands for compressed air are instantaneous or relatively very short and storage capacity near such points avoids excessive drop.

Figure 1. Multi-cylinder, two-stage, single-acting air compressor used in paper box manufacturing.

(d) Provide frequent outlets on each header or main for attaching hose for air-operated equipment, always putting the outlet at the top of the pipe line to prevent carryover of condensed moisture to the tool. Frequent outlets result in shorter hose length and, therefore, less pressure drop through the hose.

(e) Arrange all piping so that it slopes toward a drop leg or moisture trap in order that condensed moistuhe may be removed from the piping system and prevent it from being carried over into the air tools or compressed air-operated devices where it is harmful.

In planning the distribution system, it should be remembered that over-size piping costs little more than smaller size because most of the initial expense is for labor.

Type of Compressor: Following the five analyses and thorough consideration of the data obtained, the selection of the particular type of compressor—that is, reciprocating, rotary or centrifugal—should be based on consultation with various manufacturers whose engineers are best qualified to make such recommendations.

Before finally determining the precise type of compressor to be installed, consideration should also be given to the various types of power used to drive compressors —electricity, steam, oil, gas or gasoline. The type of drive deserves careful study from the standpoint of first cost, operating cost, reliability of power or fuel supply and maintenance. Anticipated plant load factor will also occasionally have a bearing on the selection.

The above discussion has been in the general nature of an outline. Manufacturers of compressed air equipment maintain trained staffs qualified to advise on specific problems in the generation and distribution of compressed air power.

Part II of this article will discuss a costly and waste-

Figure 2. Air cylinders maintain uniform pressure on paper machine press rolls.

ful practice which should not be tolerated—low air pressure. Causes, effects and remedies of this abuse will be covered.

Part II

Low Air Pressure—Its Causes Effects and Remedies

Low air pressure is an abuse of the compressed air system—is a costly and wasteful practice which should not be tolerated. Ignorance of the effects of low air pressure contributes more than any other single factor to a lack of appreciation of the effectiveness of compressed air power.

By "low air pressure" is meant inadequate pressure at the tool or the device which is air-operated. It is at this point that the air is used as power. Only the pressure and volume of air available at the point of use can be effective in doing work. Most pneumatic tools, for example, are designed to operate at 90 pounds gauge maximum at the tool. This means pressure at the point where the air enters the tool while the tool is operating. If the pressure is below the range of 85 to 90 pounds gauge, then it should be considered too low since it reduces the ability of the tool to do the maximum work for which it was designed.

The Causes of Low Air Pressure: The causes of low air pressure are easily classified: (1) Insufficient compressor capacity; (2) Inadequate piping; and (3) Leakage.

When it is discovered that pressure is too low, the first inclination is to install more compressor capacity. That is not necessarily the correct answer. It should first be determined whether the compressors are at full load when the air pressure is low. If they are, then more compressor capacity may be required but, even then, consideration must first be given to two other common causes of low air pressure.

The second cause is "inadequate piping." A measure of the adequacy of piping is the pressure loss between the air receiver, where the compressor endeavors to maintain a constant pressure, and the point of use. This should not exceed 10 per cent in a well designed system. The absolute maximum drop for the worst point in the system should not exceed 15 percent. If the pressure drop is greater than 10 percent average, 15 percent maximum, throughout the entire distribution system (including hose), then attention should be given to correction of this fault before considering increased compressor capacity.

A third cause of low air pressure is leakage or loss of air without doing work. It has been pointed out that permitting excessive leakage is the same as exhausting the output of a compressor directly to atmosphere.

Obviously, if leakage is eliminated, the compressed air formerly wasted will be available for useful work. The expense of making lines tight will undoubtedly be less than the installed cost of a new compressor, while the daily power saving may be considerable.

The gas industry considers a loss of more than one cubic foot per minute per *mile* of 3-inch line as excessive.

Elimination of leakage is certainly a sensible step toward maintaining air pressure and conserving power.

The Effects of Low Air Pressure: There are very few uses of compressed air not vitally influenced by low air pressure. All portable pneumatic tools, rock drills, concrete breakers, hoists, scrapers, loaders, all pneumatic transfer and conveyor systems, paint sprays, oil burners, sandblasts, air lift pumps, etc. operate less effectively when the proper air pressure is not maintained.

The positive result of increasing air pressure to the proper value is: (1) Increased production, and (2) Reduced cost per unit produced.

The economic advantages of increased air pressure (or conversely, the losses due to low pressure), can be nicely illustrated by considering portable pneumatic tools. For example, an average increase of 37 percent in production can be obtained for about 30 percent increase in air consumption by increasing the air pressure at the tools from 70 pounds to 90 pounds.

Consider an installation of 20 tools operating from an $8,500 compressor plant, first at 70-pound gauge and then at 90-pound gauge.

With power at 1c per kilowatt-hour, fixed charges at 15 percent of installed cost, plus labor and supplies, air at 100-pound pressure costs 5c per 1,000 cubic feet.

The following tabulation brings out pertinent data:

Number of men and tools	20	20
Operating Air Pressure at Compressor	100 lb. ga.	100 lb. ga.
Operating Air Pressure at tools	70 lb. ga.	90 lb. ga.
Tool Load Factor	33%	33%
CFM Required per tool at maximum load	50	68
Number of men and tools	20	20
Total CFM used	333	453
Total cu.ft. used per 8-hr. days	160,000	217,600
Cost of air per 1000 cu. ft.	$ .05	$ .05
Cost of air per day	8.00	10.88
Increased air cost	...	2.88
Labor rate per 8-hr. day (incl. burden)	16.00	16.00
Total labor cost per day	320.00	320.00
Total cost per day	328.00	330.88
Ratio of air cost to total cost	2.4%	3.3%

Assuming that only one-third of the 37 percent increase in tool productivity can be translated into labor productivity, it is evident that 12 per cent more actual work will be accomplished with 90-pound gauge air pressure than with 70-pound gauge air pressure. The work previously done for $328.00 can now be done in less time and will reduce the cost to $330.88 divided by 1.12, or $294.71. Thus, even though air costs are increased, there is a net saving of $33.29 per day, or about $8,500 per year (equal to the first cost of the compressor plant).

Analyzing this another way, when the pressure is increased at 90-pound gauge, the tools require 120 cubic feet per minute more air. A compressor with motor and auxiliary equipment to supply about this amount of air would cost $2,200. The saving of $33.29 per day would pay for this new unit in 68 working days, less than three months.

When the question arises of purchasing additional

compressor capacity as opposed to making other arrangements for the operations involved in a shop, it should be remembered that adding to compressor plant capacity frequently affords protection for many vital shop operations other than the operation of pneumatic tools. Among these are sandblasting, paint spraying, hoisting, agitation of liquids, air jet vacuum equipment for cleaning foundry sand, operating controls in power plants, air chucks in a machine shop, safety devices on punch presses, air jets for ejecting parts from presses, etc.

The Remedies for Low Air Pressure: The remedies for low air pressure are just as definite as the causes and effects.

Faulty air power conditions are usually due to poor planning or to increased air uses without corresponding system expansion. Plant-wide analysis should determine the full extent of low air pressure and the present air flow requirements. Future growth must also be considered.

Pressure loss varies roughly as the square of the velocity of air flowing through the pipe. For example, a 3-inch line, 1,000 feet long, will handle 500 cubic feet per minute with a 2.5-pound pressure loss, while a 4-inch line will pass about 1000 cubic feet per minute with the same drop. The installed cost of the 4-inch line will, however, be very little more than that of the 3-inch line, since most of the cost is labor.

Methods of increasing pipe line capacity to decrease pressure loss and improve conditions at the point of use vary with different installations. One may call for a line paralleling the original, with frequent interconnections; another may require installation of a loop system with some outlets taken off the new line to relieve the old; still another may need a complete new system.

Branch lines and manifolds for attachment of tools, etc. should be planned "oversize."

Not the least of the problems of correct system layout is the selection of proper hose for final transmission of compressed air to the tool. Losses of 15 percent to 25 percent in air pressure are frequent in the hose alone. *Don't* use a hose longer than is necessary to make the tool available to the work and to give proper freedom of movement to the operator.

Every cubic foot of leakage eliminated is pure gain. Such losses in many systems will reach 10 per cent to 20 per cent of the total air compressed. An air leakage test should be run on the complete plant and every section of hose should be inspected. Although leaks are usually small, they may be numerous, having a high total effect. A single 1/16-inch hole will waste 182,000 cubic feet per month, costing $9.10.

The most likely locations of small leaks is around valve stems, in hose connections, unions, drains, homemade blow guns, and lines leading to inoperative tools.

Elimination of leakage involves making the system tight, then *KEEPING IT TIGHT*. Regular inspection is mandatory.

Only after it has been determined that the distribution system is adequate and that leakage has been eliminated, should increase in compressor capacity be considered.

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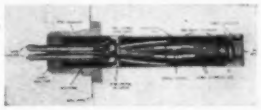
EQUIPMENT AND SUPPLIES

Detect-A-Fire

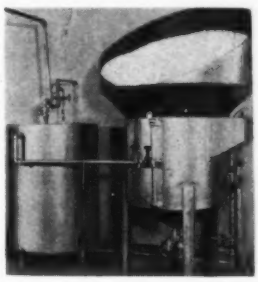
The Detect-A-Fire fire detector actuates an alarm electrically on a master board. Units are described as highly sensitive for both ordinary and explosion-proof applications over a broad temperature range. Setting up



to 725° may be specified. Calibration is done at the factory. The units are intended to be spaced at 5-foot intervals and 12-½ feet from adjacent walls. Each unit operates at almost the precise calibrated temperature regardless of rate of temperature rise, the maker states. In the Detect-A-Fire, expansion of the hermetically sealed stainless steel casing is transmitted to the inner strut assembly which magnifies the motion and operates the contacts. For details and prices write to Fenwal, Inc., Ashland, Mass.

Lixator Brine

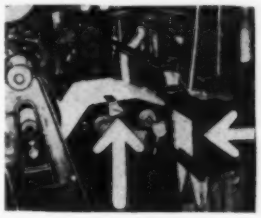
Lixator Brine, made automatically from rock salt in a Lixator, simplifies the process of regenerating water softeners and make possible economies in the handling and use of salt. With this installation, regeneration is a mat-



ter of opening a few valves and returning in a few minutes to close them. The Lixator consists of a rock salt storage hopper over a dissolving tank with brine collection chamber. Rock salt flows by gravity from the hopper into the tank beneath until the tank is completely filled. Water enters the tank near the top and dissolves rock salt as it flows downward. About half-way down the water becomes fully saturated brine, and the remainder of the rock salt in the tank acts as a filter bed that removes all insoluble matter from the brine so that it reaches the collection chamber both saturated and crystal clear. For details and prices write to International Salt Co., 475 Fifth avenue, New York 17, N. Y.

Hunter Gloss Recorder

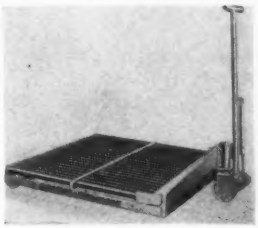
The Hunter Gloss Recorder is designed to provide continuous gloss records during production. A 75° gloss exposure head was combined with a specialty modified recorder to make a continuous gloss recorder of high precision and accuracy. To make the apparatus practical for continuous mill operation, a method for keeping it continuously in calibration has been devised. The technique applied to gloss measurements may also be applied with little variation to measurements of reflectance, brightness, capacity and some of the factors in color. Illustration shows a demonstration installation



of the device on a supercalender stack in paper mill. The gloss of the paper is being recorded as it leaves the supercalender. Paper of high and uniform gloss is necessary for the accurate rendition of color halftones. For details and prices write to Henry A. Gardner Laboratory, Inc., 4723 Elm street, Bethesda 14, Md.

Pallet Switcher

Pallet Switcher is designed to solve the problem of loading pallets inside a freight car and transferring them to a roller conveyor for movement to warehouse. Empty pallets are loaded to a special truck having rollers in place of a conventional platform. The truck can be moved about inside a freight car or truck so that palletized loads can be made up from goods being received. When loaded, the Pallet Switcher is pushed to the conveyor and carried to the warehouse floor where it can be



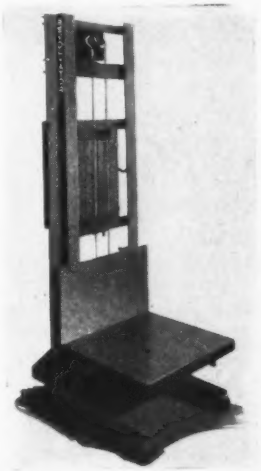
handled and stacked by fork trucks. Specifications, when designed to handle standard 48″ pallets, include a double row of rollers on 2″ centers. The top is 48″ square. Loading capacity legend, 4,000 lbs. Hinged stops are provided to prevent the pallet's rolling from the truck while in motion. Handle is furnished with a self-contained holdup device. For the application described, truck was furnished with platform height of 5½″. The small rear wheels were equipped with ball bearings and the large front wheels with Timken roller bearings. For details and prices write to Lyon-Raymond Corp., 5081 Madison street, Greene, N. Y.

Cup-Seam

Cup-Seam is a water-resistant seam adhesive for use in the production of paper drinking cups and similar types of food containers. It is a white emulsion which dries to a clean, colorless film. The solution is offered as odorless, free from solvents and non-toxic. Cups and food containers produced on regular equipment with Cup-Seam have undergone extensive usage tests. Results indicate that cups thus fabricated are highly water-resistant and will withstand contact with both hot and cold liquids for a prolonged period of time without leakage or staining of the paper. For details and prices write to National Adhesives, 270 Madison avenue, New York 16, N. Y.

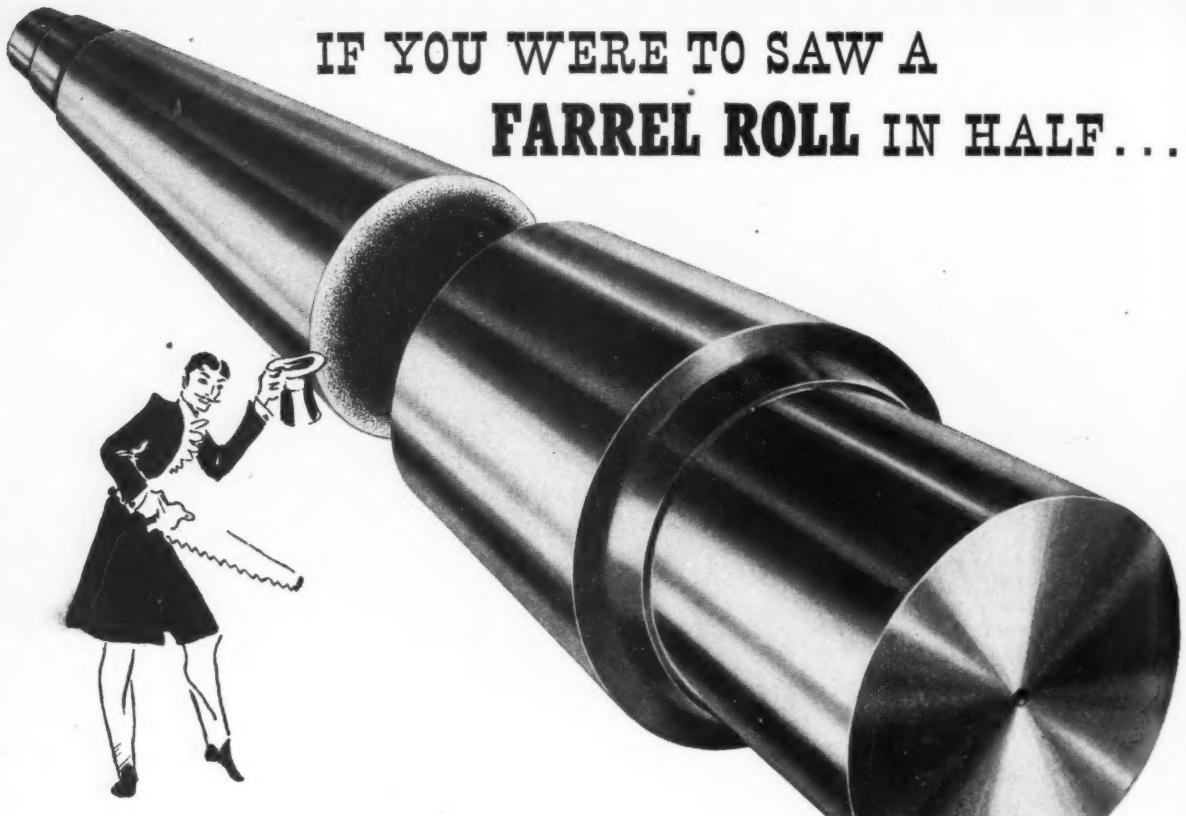
Uplifter

The Uplifter is a light-weight, hand-operated portable elevator for lifting and piling materials factories, warehouses, and like places. Overall height of the machine is 77″, height of lift 62″. Platform is 24″ square and height



when lowered is 4½″. The Uplifter rolls on Timken bearings, has a turning radius of 45″. By means of a lengthening of hoisting cable—running it through a double sheave—it is said the capacity may be doubled with about the same amount of pressure on crank handle. Overall length of the Uplifter is 40½″, weight 415 lbs. For details and prices write to Revolvator Co., North Bergen, N. J.

IF YOU WERE TO SAW A **FARREL ROLL** IN HALF...



. . . You would see why these rolls provide maximum paper-making service.

From the mirrorlike surface to a depth varying from ⅜" in small sizes to 2" in large diameter rolls, you would find a white iron "skin" or chill. This extremely hard face which is capable of taking a very smooth finish, is deep enough to assure long-wearing durability.

Below this relatively brittle chilled surface, you would see the gray iron structure of the body wherein lies the principal strength of the roll. The thickness of chill, intermediate mixed iron and gray iron body are combined in correct proportion to provide maximum service without danger of breakage.

To produce rolls from 5" to 72" in diameter and up to 312" in face length, requires specialized experience and facilities as Farrel has developed them over nearly a century of casting, machining and grinding tens of thousands of different sizes and types of rolls in the world's largest specialty roll shop.

Write for information about rolls for specific applications or for details of the other products listed on this page.

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Smoothing Rolls
Coating Rolls
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Silicating Rolls
Rolls for Miscellaneous Special Purposes
(Made of Chilled Iron, Gray Iron, Meehanite, Alloy Iron, Steel, Chromium-Plated)

CALENDERS: Paper and Board

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SECTION OF THE

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OF THE PULP AND PAPER INDUSTRY

122 E. 42nd ST., NEW YORK 17, N. Y. Edited By R. G. MACDONALD, Secretary

Coating Paper on the Paper Machine by the Rotogravure–Offset Method*

By Gerald Haywood[1]

Abstract

The equipment and operation of the rotogravure-offset method of paper coating is discussed.

The coating is applied from the color pan to a color roll which deposits the color on a knurled roll having a continuous pattern of cuplike indentations. A doctor removes the excess and the coating is transferred to the paper by the use of a rubber covered coating roll which is in contact with the knurled roll. The coating weight is determined by the number and volume of the engraved cups.

Efforts to coat paper on the paper machine date back to before 1880 as indicated by the list of patents *(1)* at the end of this section. Many of these patents cover the insertion of conventional coating equipment into a section of the paper machine.

The final development of machine coating had to await advances in technique, materials and equipment—such as special clays, modified starches, dispersing agents. In several instances, the equipment developed to apply "color" to the base paper was adapted from equipment used in the printing industry. The rotogravure-offset method of machine coating gets its name from the fact that both rotogravure and offset printing techniques are used.

The successful development of the rotogravure-offset method of machine coating is based on the art of knurling a copper-plated roll, so as to produce uniform, regularly spaced indentations or cups in its surface. Each cup is completely surrounded by a wall and completely separate from the other cups. These cups are similar in shape and depth to the cups produced by etching as used in the manufacture of rolls for rotogravure printing. The advantage of knurling is that the cups are not interrupted by a seam as is the case in an etched roll. Rolls knurled in this manner have been used for many years to put ground coats on wallpaper and oilcloth. Knurled rolls are often called "pad" rolls, and have been used in this country and in England for many years *(2)*. In "pad" roll coating the "pad" roll directly contacts the material being coated. On offset or coating transfer roll is not used. Therefore the "pad" roll is used in the same manner as an etched roll is used in rotogravure printing.

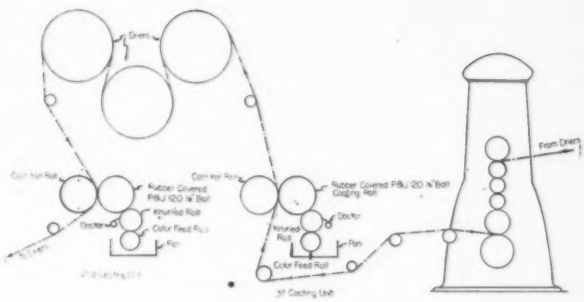

FIG. 1
Roto-Gravure Offset Coaters

The rotogravure-offset method of printing as illustrated in several patents *(3)* has also been used. The use of an etched rotogravure roll in conjunction with an offset roll to coat or decorate paper on the paper machine is covered by patents to Smith of the D. C. Paper Company *(4)*. This same offset principle has Haywood *(5)*. The offset principle has also been disbeen disclosed in patents to Obenshain, Harrigan, and closed in a patent to Massey *(6)*, but the roll used to meter the color to the offset roll is not a knurled roll. The offset principle has also been disclosed in some old patents *(7)*.

Equipment

The apparatus used in the rotogravure-offset method of machine coating is illustrated in Fig. 1. It should be noted that the coat is applied to the felt side of the base stock and that the paper is partially dried by passage over three drum dryers before the coat is applied to the wire side, and the drying then completed in the conventional manner.

Each coater consists of the following units: (a) color pan; (b) color feed roll; (c) knurled roll; (d) doctor blade; (e) offset or coating roll; (f) base paper; (g) backing roll.

The color pan receives the color from the supply line from the color room.

* Presented at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 23-26, 1948.

[1] Member TAPPI; Project Director, West Virginia Pulp & Paper Co., Luke, Md.

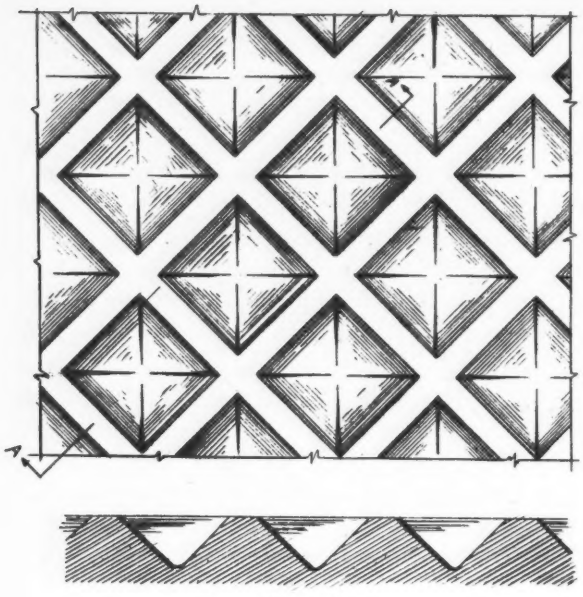

FIG. 2
Detail of Cups in Knurl

The color roll is immersed in the color in the color pan. The color roll is separately driven by a slow-speed motor and gear reducer. It's function is to fill the cups in the knurled roll with color.

Color Transfer

The knurled roll has numerous regularly spaced cups or depressions in its surface. Each cup is completely surrounded by a wall. These cups are produced by pressing a knurling mill against a copper-plated roll as it turns in a lathe. The mill indents the copper and pushes the soft metal aside. The size and shape of the indentation depends on the knurling mill. Cups may be diamond, hexagonal or circular in shape. The roll after knurling is plated with a film of chromium to increase its useful life. The diamond-shaped cup illustrated in Fig. 2 seems to work best for coating with aqueous colors. The ratio of cup area to wall area is slightly over 2 to 1; i.e., 70% of the area in a new roll will be due to cup and only 30% due to wall. The depth of the cup is dependent on cup frequency as illustrated in the following table.

Cups per Lineal Inch	Cups per Square Inch	Depth of Cup, in.	Volume of Cups in 1 Square Inch	Coat Weight New Roll
48	2304	0.0070	0.0049	9-11
56	3136	0.0065	0.0046	8-10
64	4096	0.0050	0.0035	7-9
74	5476	0.0040	0.0028	6-8

The knurled roll in Fig. 1 is in rolling contact with the rubber-covered coating roll. The excess of color on the knurled roll is brought down to cup level by the doctor blade. The cups thus function as measuring units for metering the color to the coating roll.

The coating roll is covered with an inch layer of rubber with a P. J. hardness of 120 with the ⅛-inch ball. At the point of contact between the coating roll and the knurled roll, color is pulled out of the cups by a surface tension or adhesive effect. The color that is pulled out forms a film on the coating roll. It must be noted that only a portion of the color in the cup is pulled out by the rubber roll. The film of color is transferred to the paper by rolling contact between the coating roll and the paper. There is a tendency for the film to split at this point of contact, most of the film sticking to the paper but a portion following the rubber roll. The film splitting tends to put a texture into the uncalendered coated surface. This texture is ironed out in the supercalenders.

The backing roll is made of cast iron, and its function is to press the paper against the coating roll. The knurled roll, coating roll and backing roll are geared together and have a surface speed equal to the speed of the paper machine.

The apparatus as described can tolerate a wide range of color solids and viscosity. The low range of solids is about 45%, and is set by the condition which permits the nip between the knurled roll and the rubber roll to become flooded with a too fluid color. The upper limit is set by color solids, which will not reflow on the coating transfer roll. It might be mentioned that a limitation not in the apparatus is the viscosity of a color which can be readily pumped through available pipe lines. While the metering function of the knurled roll is not strictly volumetric—being affected by viscosity, tack, condition of the rubber roll—the virtue of the knurled roll is in the fact that the coat weight transferred to the paper cannot be changed at the caprice of any operator. To change coat weight, it is necessary to change the knurled roll.

The cup area of a knurled roll decreases with use, due to the wear of the doctor blade against the walls surrounding the cups. The life of a knurled roll is in the period between 70% cup area and 40% cup area. This period depends on the speed of the paper machine and the cup frequency. Useful life is from 6 to 8 months.

The knurled roll can tolerate a wide variety of adjuncts in the color but it has been found that certain wax emulsions and oils do have a deleterious effect on the rubber-covered coating roll.

Discussion

Q. Why doesn't the wet color come off or stick to the drying cans?

A. The answer lies in the high solids content and thixotropic properties of the "color." As the "color" moves through the various nips of the cooperating rolls in the coating apparatus, it is subjected to severe shearing. Therefore at the point where it is applied to the paper it is quite fluid. As soon as the sheared "color" is applied to the paper, it "sets" because of the removal of the shearing force and because of the abstraction of water from the film of color by the absorptive base stock. This "setting" of the color takes place very quickly, so that the wet coated sheet can contact driers without smearing at any speed it is practicable to run a paper machine.

Q. Why coat one side at a time?

A. There are several reasons for coating one side of the base stock at a time. (1) It is possible to produce either coated one-side paper or coated two-side paper dependent on demand. (2) The inherent absorptivity of the base stock will be overtaxed by the sudden application of the total coat. By coating one side at a time, the distortion and wrinkling of the coated sheet in the drier train is avoided. (3) It is possible to adjust the adhesive in the color to take care of the difference in the firmness of the felt and wire sides of the base stock.

Q. Why do you start with a discontinuous surface if

you wish to end up with a continuous surface? Any technical advantages or just patent considerations?

A. The knurled roll functions as a metering roll and while it has a discontinuous surface, there is some reflowing of the color on the rubber-covered coating roll and at the point of contact there is complete merging of the color and the actual squashing of the color into the base stock.

Anyone with background in the brush coating field knows the difficulty of obtaining metal squeeze rolls which are perfectly round and perfectly level. The combination of a metal metering roll and a rubber covered coating roll that can compensate for lack of roundness and levelness is necessary when applying films of color of the order of 0.0005-inch thick. The technical advantages are obvious.

Q. What are the advantages of the rotogravure method?

A. The good points of the rotogravure apparatus are:

1. It will handle color up to 75% solids.
2. For any knurled roll, the coat wright cannot be changed by the caprice of any operator.
3. Pinholes due to foam in starch-clay machine coat colors are not a part of our experience.
4. The rubber-covered coating roll can be mechanically damaged or chemically poisoned by waxes, soap, etc., and thus cause skip—but such damage is infrequent.
5. The evenness of finished coat—either as weight across sheet or as texture, is quite satisfactory.
6. This type of coater does not put into the paper, the numerous imperfections put in by other type coaters. There are no pinholes, birdseyes, brush marks, hair marks, color lumps, stick puckers, stock wrinkles to be sorted out in the finishing room.

Q. Can the rotogravure method be used on insulating board?

A. The rotogravure method is being used to coat various types of board.

Q. Can small rolls be obtained for the laboratory?

A. Small knurled rolls can be obtained. Our experimental work was conducted by the use of small rolls.

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   U. S. pat. 2,293,690-1, Aug. 18, 1942, Harrigan
   U. S. pat. 2,357,824, Sept. 12, 1944, Haywood
6. U. S. pat. 2,236,005, Mar. 25, 1941, Massey
7. U. S. pat. 707,289, Aug. 19, 1902, Weston
   U. S. pat. 856,886, June 11, 1907, Kubler

TAPPI Notes

Packaging and Display Encyclopaedia

For those interested in packaging, George Newnes, Ltd. has recently published a Packaging and Display Encyclopaedia (870 pp. 8x11). Its make-up is quite similar to the American encyclopaedias covering the same subject, with each aspect of packaging covered by a specialist in the field. It is devoted to British packaging but has great educational value to readers everywhere.

Among the subjects covered are: packing department layout, insurance of goods in transit, packaging for air and rail transport, packaging for the tropics, shipping requirements and regulations, importance of trade marks and labels, British standards for packaging, package testing, importance of research in packaging, Printing and Allied Trades Research Association, institutions and associations, and government controls of containers and packaging.

Copies may be obtained from George Newnes, Ltd., 342 Madison Ave., New York 17, N. Y. at $20.15 postpaid.

Forest Valuation

McGraw-Hill Book Co. has recently published "Forest Valuation" by Herman H. Chapman and Walter H. Meyer, of Yale University. (521 pp. 9¼×6½). It is written with special emphasis on basic economic principles.

Among subjects covered are: sources and origins of economic values; market value of forest property; evaluation of services and benefits; sustained yield management; methods of appraisal of the present worth of forest property producing periodic but not annual increase; forest rent and rotation; taxation of forest property; appraisal of damages; forest fire insurance; methods of appraisal of stumpage values; and appraisal of forest property to be purchased for future operation.

Copies may be obtained from the Book Department of the Technical Assn. of the Pulp & Paper Industry, 122 East Forty-Second street, New York 17, N. Y. at $6 per copy.

Forest Products Research Society Annual

The Forest Products Research Society has just issued its first volume of Proceedings (340 pp. 10½ x 7½).

This cloth-bound book incorporates the papers and discussions presented at its first national meeting, held in Chicago on October 31st and November 1st, 1947. It also includes a directory of the membership.

Among subjects covered are: Whole Wood Fibre Manufacture, Problems of Lignin Chemistry, Paper and Plastics Overlay for Veneers and Plywoods, Trends in Logging, Influence of Building Codes on Construction, Developments in Post War Packaging Field, Development in Woodworking Glues, Acid Proofing of Wood, Aspects of Kiln Design; etc.
treasurer, Forest Products Research Society, Box 2010,

Copies may be obtained from R. C. Wilson, secretary-University Station, Madison 5, Wis. at $6 per copy.

Experiences with Pulpwood Handling and Accounting*

By C. E. Patch[1]

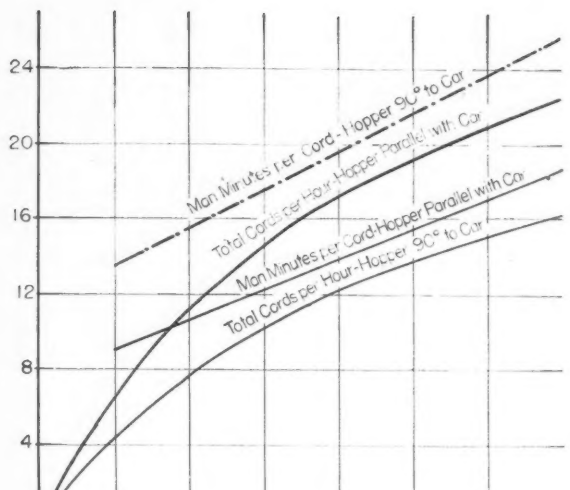
Man Minutes per Cord - Hopper 90° to Car
Total Cords per Hour-Hopper Parallel with Car
Man Minutes per Cord-Hopper Parallel with Car
Total Cords per Hour-Hopper 90° to Car
NUMBER OF MEN IN CAR

FIG. 2
Unloading Pulpwood from Box Cars.

Abstract

In all transportation problems, movement should be in the largest possible units and loading and unloading should hold the transporting medium idle the shortest possible time. Picking up and setting down a piece of lading, changing direction of movement, storage in process and changes in unit size along the way all add to transportation cost.

There is a short discussion of some of the cost factors involved in handling pulpwood including not only those of wood yard organization and operation, for which the wood yard foremen and employees are responsible, but those of the kind of facilities provided and the purchasing and inventory policies set by the management or imposed by conditions.

At the outset, the fact should be recognized that the problems of pulpwood handling are those common to all transportation. They involve loading, transporting by many types of conveyance, and unloading. They also involve storage and reclaiming. There are certain principles which attach to all transportation. For instance, loading and unloading should hold transporting units inactive for the shortest possible time. This is more than ever true with individually powered units like automotive trucks. Rolling equipment earns money while it is rolling.

Then there is the fact that every time a piece of lading is picked up and set down it costs money.

Again, when the direction of movement is changed, there is usually some delay and cost.

Lading should be in the largest possible units which can be economically handled.

Storage is an added cost to transportation and operating.

There is a handling and cost problem whenever large transportation units must be broken down to meet the requirements of a new conveying method or of operations.

One of the early things the author learned was not to put a lot of time on perfecting an operation if there were any way to eliminate the operation. Another, was not to jump at conclusions from the study of average figures. As an example consider the comparison of the total average cost of unloading and handling all the pulpwood entering the chip houses of three different mills.

At mill No. 1, the actual cost as indicated in Fig. 1 is 56½ cents per cord, at mill No. 2 it is 36½ cents per cord, and at mill No. 3 it is 24 cents. This makes a difference of 32½ cents per cord between mills 1 and 3. Before making any studies as to how to reclaim part of this 32½ cents, it is necessary to do a little sifting of these average figures, which on general principles, are held under suspicion. It is known that this average is made up of the costs by several routes from the cars to the chip house. Some of the wood went through the long lay storage piles, some went through quick turnover track side or drag side storage and some went direct from the cars to the chip house drag. The latter is the simplest route so it is used as the sifter by plotting the average costs at each mill over the percentage of the total cords which travelled this route. Now, using studies of the cost by each route at Mill No. 1, plot what its average cost would have been if it had the same per cent of direct-to-the-chiphouse wood. It will be noted that this would give them a 37 per cent per cord cost under mill 3 conditions and the difference to be investigated is 13 cents instead of 32½ cents—in other words, instead of having to explain an excess of 135% it is necessary to worry about only 54%.

Now consider some of the conditions which surround the wood handling at mills Nos. 1 and 3.

At mill No. 1, the unloading of wood from cars direct

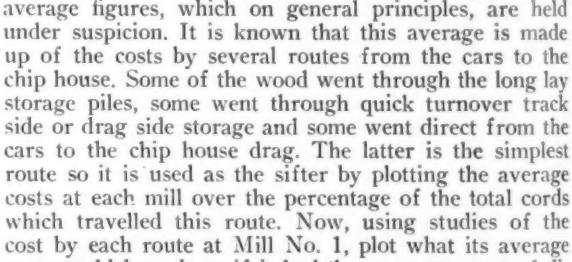
AV. TOTAL COST PER CORD OF ALL WOOD TO CHIP HOUSE
Calculated Difference Due to % Direct to Chip House
Actual Cost
Mill No. 1
Mill No. 2
Mill No. 3
Actual Cost
PER CENT DIRECT FROM CARS TO CHIP HOUSE

FIG. 1
Cost of Pulpwood Handling.

* Presented at the Second Engineering Conference sponsored by the Technical Association of the Pulp and Paper Industry, held at The Bellevue-Stratford, Philadelphia, Pa., Nov. 3-5, 1947.

[1] Morton C. Tuttle Co., Boston, Mass.

ED. NOTE: Mr. Patch's paper was illustrated with 54 slides and parts of the paper would be unintelligible without illustrations. The editors have taken the liberty to recast parts as could be understood with the aid of the few illustrations which could be reproduced in the space allotted.

FIG. 3
Unloading Platform at Mill No. 1.

to the chip house drag is done in a hopper which has neither the size nor the surroundings to allow an economical unloading job. The hopper is so close to the switch over which the cars are placed on the siding, that not many cars can be pulled past the hopper by the car puller. One of the tracks serves other commodities as well as pulpwood. This track curves away from the hopper so that as a rule, only one car is worked at a time on this side. The space between the cars and the hopper is too wide for economical unloading and the car floors are not enough above the edge of the hopper. One of the conditions desirable for the quick and economical handling of freight of any kind is a long freight frontage giving more points of contact with the train. Given a certain demand for goods per unit of time, the fewer cars that can be worked simultaneously the more expensive the operation. The demands at mill No. 1 are such that the quantity which it is necessary to unload at each unloading station, exceeds that which can be handled by a crew of economical size, and as a result, the crews are increased and the cost follows suit.

A fourth unloading station is located over a drag which is at 90° with the track with a long drop from the car.

This crew size cost relationship is shown in Fig. 2 which reproduces a chart based on a series of time studies made under varying crew conditions but at the same mill so that the influence of the personal element was at a minimum. It is quite apparent that if all the unloading could be done with one man in a car, it would be the most economical so far as labor cost is concerned. When there are two men to a car there is a period when the car is first opened when only one man works. It is possible that if one of the two men was left-handed, the two could overcome the car opening handicap and do a better job than the two right-handed men. The author never happened to be fortunate enough to have the opportunity to time such a crew. With more than two men in a car, the interferences begin to count and while the total wood unloaded per station increases the cords per man hour decreases and the cost goes up.

In addition to this relationship between demand and facility which militates against mill No. 1, examine some of the physical details of the eqiupment which have a considerable bearing on the cost of unloading.

Note in Fig. 3 for instance, at mill No. 1, the wide horizontal distance a log has to travel from the car door to the edge of the hopper before gravity can do its part in the transportation cycle. Compare this with the narrow distance shown in Fig. 4 at mill No. 3 which allows gravity to go right to work on the stick as it emerges from the car door.

Previously referred to was the unloading hopper at

FIG. 4
Unloading Platform at Mill No. 3.

mill No. 1 which serves the drag is at 90° from the track. In addition to the difficulty of unloading to such a drag is the likelihood of having a lot of spillage, all of which has to be reclaimed and holds the unloading gang on the job after the unloading is officially done.

Spillage often happens at the junction between two drags. As previously mentioned, every stick that has to be rehandled adds to the cost of unloading. This is more

FIG. 5
Pineapple Conveyor.

FIG. 6
Poor Unloading Conditions at Siding.

than ever true since the arrival of the 40-hour week with overtime.

A rather interesting method of treating a junction is in a somewhat obscure mill up in Maine in which the width of the sides of the drag was increased and a second booster or combing chain for a short distance at the junction used. While this happens to be a double junction handling a drag coming in from the pile and a cross drag, the same treatment would probably save a lot of trouble at a straight-away junction.

At one mill considerable spillage occurs at the side feeder to a big stacker. There is a duplicate feeder on the opposite side of the stacker. There are times when a log from the side feeder hits on a log lying in the stacker trough and thrusts back into the chain as it is coming over the gear, and the lugs on the chain give the log a kick. There is a double hazard of spillage and a broken chain. A metal guard fitted over the gear with plenty of clearance for the chain lugs might cure this trouble.

The author recently had an experience with a similar junction trouble out in Honolulu which may be of interest. The junction was between a conveyor coming over a boom from the sugar warehouse on the pier and the chutes rigged aboard ship to take the sax to the hatches. Every little while a sack would jam, the following sack would fall to the deck and the conveyor would have to be shut down till it could be cleared. Sometimes an ear of the sack would get caught in the chain and the sack would be ripped open and a shower of sugar would fall to the deck to be attacked by thousands of bees. A study of the log sheet showed a lot of down time during the working day, both at the start due to the time it took to rig the junction and to the jam delays. In addition, was the cost of resacking loose sugar and rehandling whole sacks which had dropped to the deck.

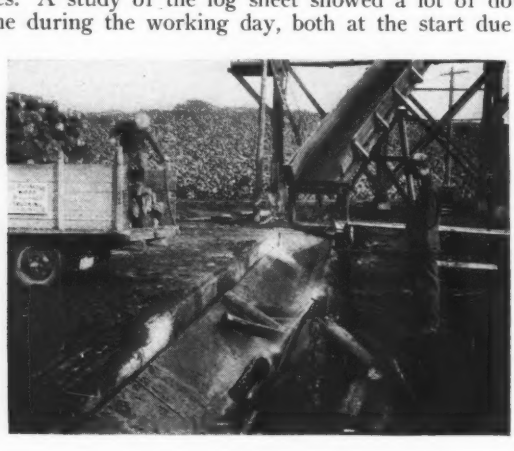

FIG. 7
One Truck Unloading Pulpwood.

A new type of junction was sketched and with the aid of a skillful Jap mechanic in the railway shops, was fitted to the end of one of the warehouse booms. The new junction was rigged in much less time, was much less a safety hazard and during the first days' run, not a bag was dropped to the deck. Needless to say, there was an immediate request for similar junctions for the other booms. The startling thing about such waste is that it can continue year after year with nothing more serious being done about it than to log the results and possibly lodge it in the statistics.

A good many years ago, the author was in a yard where all the wood was ranked and saw a big gang loading wood out of the ranks to go to the chip house. The idea occurred to the author that the wood should be handled in larger units and by crane, possibly by bundling at the shipping points. There were no facilities there with which to experiment but later he happened to be in a wood yard where a crane with a bucket grab was at work and in the mill of which they used Stanley steel strapping. Some logs were bundled and the crane picked up the bundle and dropped it several times with no ill effects. The idea was not developed, however, because he never was back at the original yard which was in another part of the country. The West Virginia Pulp & Paper Co., have however, made use of steel hoops for handling bundles of wood at their plant at Mechanicville.

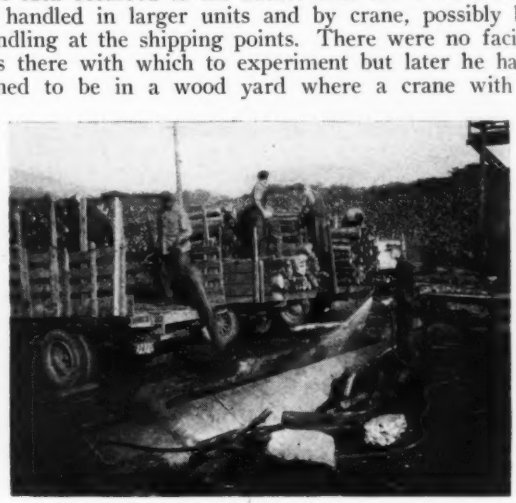

FIG. 8
Note That Only Three Trucks Out of Four are Being Unloaded.

When pulpwood is shipped in longer lengths, as it is at some mills, crane handling becomes a more orderly and simple operation. In the southern mills, 5-foot wood is being unloaded from flat cars in the same way.

This brings to mind another idea that was never developed so far as pulpwood is concerned. Its embryo is in use in a New England yard where a live roll transfers from a long unloading conveyor to a stacker. As the author has watched cranes reclaiming pulpwood from the storage piles, dropping big gobs of wood like jackstraws onto a drag, then having a crew of men with pickaroons pulling them into order in the drag, he has wondered why it would not be wise to have on a portable frame, either a live roll platform or a controlled speed slat conveyor of sufficient size on which to allow a grab load or two of pulpwood to fall apart. With a push button control, one man could then spill this wood off into the drag as well as the gang with the pickaroons do. Maybe it would not work but it would

be worth considering. Out in Honolulu an experimental installation of a pineapple handling slat conveyor dumped a couple tons at a time from a big field box onto a regular belt conveyor, an application of a principle which it would appear should work as just described with pulpwood (See Fig. 5).

Water is a good cushion on which to drop big loads of pulpwood, as is evident from watching the big sling loads dropped over the sides of vessels unloading into the boomed area at Bucksport, Maine. Judging from the beginnings made at Mechanicville, the use of sluices for conveying pulpwood may be expected to become more common.

In one yard is a good unloading siding on which a number of cars can be placed for discharging wood simultaneously and there is a narrow walkway for car opening activities. The car floors are slightly above this walkway so that gravity will help any log thrown through the door to get into the drag.

The unloading situation shown in Fig. 6 is tough on the crew. Note the precarious footing on the edge of the drag of the man hooking logs across the space

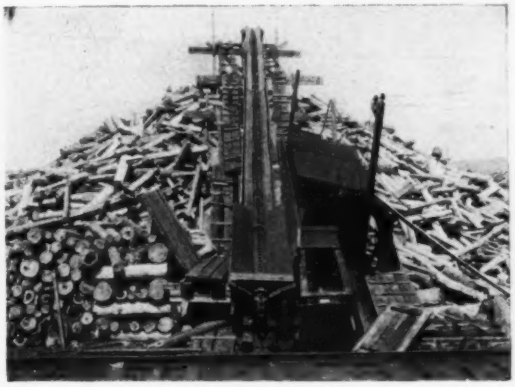

FIG. 10
Poor Conditions at Stacker.

between the cars and the drag, and the man handling necessary to get the bottom logs across the intervening walkway.

Figures 7, 8, and 9 show wood being trucked from the woodyard to the chip house because the button cable conveyor is down. This work was being done by hired trucks at a rather low figure. The truck owners undoubtedly were not trained in cost accounting and probably were not charging enough to cover all depreciation and maintenance costs. The figures indicate some of the conditions which made it difficult for the truckers to keep rolling, and the way to make money with transporting equipment is to keep it rolling. In Fig. 7 it will be noted that one truck is at the drag and one man is unloading. It is quite probable that this did not give a very good flow to the chippers. Figure 8 four trucks backed up to the drag and six men throwing off of three of them. If all three trucks were unloaded at maximum speed, which would be to the interest of the trucker, there would almost certainly be a jam in the drag. Note in Figure 9 that the wood from the 4th truck has been unloaded on the ground adjacent to the drag. This ground pile eventually extended well along the drag and it all had to be rehandled.

There is no doubt that money could be saved all around if semitrailers were used to haul this wood. and an unloader or two kept at the drag. The four helpers, who spent a considerable time riding to and from the wood yard and often stood idle during the unloading, could do a good bit of loading and still have

FIG. 9
Unnecessary Rehandling at Drag.

rest periods in the yard. Hauling could undoubtedly be so scheduled that wood would never have to be rehandled. The men could be rotated.

Some years ago the author had an opportunity to study some pulpwood hauling being done for a Georgia mill. The work was contracted and the contractors seemed perfectly willing for a study of their operations. to be made. They were hauling from the woods to a barge. One contractor organized with three trucks but only twod rivers, simulating somewhat semitrailer operation, and with a four-man loading gang in the woods and a two-man unloading gang on the barge. He was able to get seven loads per truck per day. He seemed to think he was making out all right on his contract and he was keeping his men and bills paid. Another contractor, who organized with two men to a truck who loaded and unloaded and went over the road with the truck, could get only 5 loads per truck per day. He was having payroll and other financial difficulties.

Figure 10 shows a well maintained piece of equipment which adds cost to unloading pulpwood because of its position. It is evident that the walking and turning time necessary to get from where the wood is stowed in the ends of the car to a position in front of the door which will allow the stick to hit so narrow a target, slows down the operation.

In one mill there was a short drag leading up to a chipping platform. A man was located at this drag for the sole purpose of clearing big sticks which jammed in the narrow drag, when hooked into it by the selector at the main conveyor. The foreman was asked if it would not give him a man for more essential work if he would widen the short drag and put in a double chain. Over the weekend, this change was made and the man was released.

This brief discussion indicates the need for a thorough study of wood handling conditions, especially with the object of reducing unnecessary rehandling that always adds to the cost of operations.

TAPPI Notes

W. F. Connolly, formerly of Bauer Bros., is now with the Glassrock Corporation, Pasadena 4, Calif.

Richard Collins is now vice president of the Consolidated Paper Corporation, Ltd., Grand Mere, P. Q.

Heikki Sihtola, mill manager of Veitsiluoto O/S, Kemi, Finland has returned to Finland following a visit to the United States.

Warren A. Chilson of the Northern Paper Mills was elected to the presidency of the Green Bay Rotary Club on July 1st.

At the TAPPI Testing Division Conference there will be an opportunity for manufacturers and distributors of pulp and paper testing instruments to exhibit and demonstrate new apparatus. Companies interested should write to R. G. Macdonald, Secretary, Technical Association of the Pulp and Paper Industry, 122 E. 42nd Street, New York 17, N. Y.

Inorganic Process Industries

The McMillan Company has just issued "Inorganic Process Industries" by Kenneth A. Kobe, professor of chemical engineering, Uniersity of Texas. (6x9, 370 pp.)

This is a well prepared college text requiring only preliminary knowledge of elementary chemistry. It attempts to supply the basic information needed by the student who must prepare himself to learn from current periodicals what is occuring in the chemical industries. The first chapter is devoted to the chemical literature and is an unusually good outline of the many important sources of technical information.

Among the subjects covered are: the natural sodium and potassium salt industries; sodium carbonate industry; the electrolytic caustic—chlorine industries; the chamber and contact sulphuric acid industries; the nitrogen fixation and products industries; and the phosphorus products industries.

Copies may be obtained from the Book Department of the Technical Association of the Pulp and Paper Industry, 122 E. 42nd Street, New York 17, N. Y. at $6.00 per copy.

Safety Code for Conveyors

A safety Code for Conveyors, Cableways, and Related Equipment has been published by the American Society of Mechanical Engineers and approved by the American Standards Association. This is a 53 page pamphlet 5¼ x 7¾ inches. It is an authoritative manual covering safety regulations, design features, construction and installation, inspection and maintenance, prime movers and controls.

It gives specific safety regulation for aerial cableways, apron, belt, blower, bucklet, chair, flight, gravity, live roll, overhead trolley, pheumatic tubes, screw and tiering conveyors.

Copies may be obtained from the American Standards Association 70 East 45th Street, New York 17, N. Y., at 90 cents a copy.

Technical Signs and Symbols

The Industrial Research Service has just published "Scientific and Technical Abbreviations, Signs and Symbols," by O. T. Zimmerman of the University of New Hampshire and Irvin Lavine of the University of North Dakota, both chemical engineers.

It is essentially a time-saving handbook giving thousands of abbreviations, signs and symbols of terms used in numerous fields such as chemistry, chemical engineering, thermodynamics, heat flow, humidity, mechanics, hydraulics, acoustics, illumination, electricity and electronics, mapping, communication, commerce, mathematics and statistics.

Copies may be obtained from the Book Department of the Technical Association of the Pulp and Paper Industry, 122 E. 42nd Street, New York 17, N. Y. at $7.50 per volume.

Chemistry of the Carbohydrates

The Academic Press, Inc. has just issued "Chemistry of the Carbohydrates" by W. W. Pigman of the Institute of Paper Chemistry and R. M. Goepp, Jr. of the Atlas Powder Company. (6x9, 748 pp.)

This is an outstanding monograph which is much needed as an introductory survey of the broad field of the carbohydrates, including sugars, derived products, and polysaccharides from organic, physical, analytical, biological, and industrial chemical aspects. It was written for research workers and graduate students.

Among the subjects covered are: development of carbohydrate chemistry; structure and stereo-chemistry of the monosaccharides; ring structures of the sugars; synthetic sugars, the identification and the quantitative determination of carbohydrates; esters; glycosides; the polyols; acids and oxidation products of carbohydrates; ethers, anhydrides and unsaturated derivatives; nitrogenous derivatives; oligosaccharides; cellulose; the starches and starch substances; and the polyuronides, hemicelluloses, plant gums, microbial polysaccharides and related substances.

Although the chapters on cellulose and hemicelluloses are not the main features of the book, since a book of the same size could be written on the subject, the treatment of these subjects of interest to the pulp and paper industry is adequate in presenting an understanding of the place of cellulose in carbohydrate chemistry.

Copies may be obtained from the Book Department of the Technical Association of the Pulp and Paper Industry, 122 E. 42nd St., New York 17, N. Y. at $10.80 per copy.

Quantitative Analysis Calculations

The MacMillan Company has just issued "Calculations of Quantitative Analysis" by Phillip W. West of Louisiana State University (5¾ x 8½, 162 pp.)

Although this book is arranged in the form of a series of lectures for college chemistry students, it may be considered somewhat as a handbook for chemists in the industry who, from time to time have to make quantitative analysis. Since such analysis in the pulp and paper industry are generally not of routine nature, much time can be saved if the analyst does not have to review a number of textbooks to work out the most simple and accurate means of calculating results based upon data obtained.

Among the subjects covered are: chemical factors and the fundamental calculations of bravimetric analysis; titrimetric analysis and solution strength; calculations involving percentage, specific—gravity percentage, molar, normal and titer solutions; oxidation—reduction; chemical equilibria and law of mass action; and the reliability of analytical results.

Copies may be obtained from the Book Department of the Technical Association of the Pulp and Paper Industry, 122 E. 42nd Street, New York 17, N. Y. at $2.75 per copy.